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EPIDEMIOLOGIC SURVEY IN A CITIZEN'S MILITARY TRAINING CAMP

DIPHTHERIA CARRIERS AND SUSCEPTIBILITY; CARRIERS OF INTESTINAL DISEASES *

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In the study and the control of communicable diseases, a problem of the greatest importance is presented by the carriers of infection, and especially those carriers not known to have come in contact with the sick. Surveys made in nonepidemic periods show that a surprisingly high percentage of the inhabitants of any community harbor in their bodies bacteria of disease-producing types. These persons are true reservoirs of infection, and constitute for infectious disease its main bulwark of defense. At present we have only meager and suggestive evidence concerning the proportion of noncontact carriers in the general population, and many questions, especially those connected with their relative duration and infectivity, remain unanswered. Nearly all of the surveys of which we have record have been made for specific purposes, usually during or subsequent to epidemic conditions. There is a good reason for this, since we possess no legal means by which we may enter any community and study the carrier rate among the healthy civilian population. The difficulties to be overcome before undertaking such a task, and indeed throughout its continuance, are generally sufficient to discourage those willing to perform the necessary work.

It would seem, therefore, that whenever a practical opportunity is offered to make a systematic epidemiologic study on even a fraction of the normal population, the carrying out of such a study becomes a duty that no conscientious epidemiologist would attempt to shirk.

According to the present policy of the government, young men from every community are given the privilege of a month's military training each summer at army camps located in the various corps areas. The young men attending these camps represent a great variety of home surroundings. It might at first be assumed that they would constitute a representative sample of the whole population at their age group, but this is not unqualifiedly the case. Intimate contact with them soon reveals the fact that they belong to the strong and healthy type of young man—both in body and in mind—and the findings among them would represent something near the optimum conditions in their communities.

It is obvious, therefore, that the Citizens' Military Training Camps afford an opportunity to elicit facts of the greatest epidemiologic value, and without causing the individuals studied the slightest inconvenience. The scope and thoroughness of the investigations will depend chiefly on the training and number of the personnel available for carrying out the work. It is confidently believed that as the potential value to the army and to the country of this unique opportunity to study preventable disease is realized, ample facilities will be forthcoming. Scarcely secondary in importance is the opportunity to train reserve officers in the technic of extensive surveys, such as our laboratories were called on to make in the winters of 1917, 1918 and 1919.

Recognizing the valuable field thus offered, a beginning in such studies was made at Camp Meade this year. Plans were carefully laid beforehand so that the laboratory of the Third Corps Area, with the cooperation of several technicians from the Army Medical School, was ready to fit in the work projected without interference with the strictly military phases of the training period. The investigation included a search for virulent diphtheria bacilli in the throats of candidates presenting themselves for training, the application of the skin test for diphtheria susceptibility, and a study of the feces for ova of intestinal parasites and for members of the typhoid-paratyphoid-dysentery group of bacilli.

DIPHTHERIA BACILLUS CARRIERS

During the "processing" of applicants presenting themselves for admission to the camp, throat cultures were made from all candidates, both those accepted and those rejected being included. By "processing" is meant the series of physical examinations to which every man was subjected in order to record, so far as possible, his exact physical condition. The selection of this particular time for taking the culture was the most favorable for the purpose, since the individuals concerned had been on the reservation less than an hour, and it was scarcely possible that any of them had picked up diphtheria bacilli from other students.

In taking the cultures, the usual technic was followed: Sterile cotton swabs were applied to the tonsillar region on both sides and swept over the pharynx; the swabs were immediately rubbed over the surface of Loeffler's blood serum mixture in tubes; these cultures were transferred to the laboratory, where they were incubated and examined microscopically the next day, after being stained with Loeffler's alkaline methylene blue. In making the examination, the opinion of no single individual was considered final. Each slide

*From the Laboratory of the Third Corps Area, Camp Meade, Md., and the Laboratories of the Army Medical School, Washington, D. C.

thought to be positive was examined by two or three persons, and every culture containing bacilli even remotely resembling the diphtheria bacillus was retained for further examination. Naturally, an unusually large number of the cultures were retained by such selection; but in a survey such as this, there would have been too much chance of missing virulent diphtheria bacilli had we accepted as possibly virulent only forms identical in morphology with Wesbrook's A, C and D types.

Cultures were made from the throats of 1,080 persons. In eighty-three of these, forms were found which caused us to retain them. On reexamination, seventeen of these were dropped, thus reducing the number for further study to sixty-six. The subsequent study consisted merely of making subcultures on plates containing Loeffler's blood serum mixture and on blood agar, and attempting to isolate, from these, organisms of diphtheria bacillus morphology. All diphtheria bacillus-like organisms were tested for virulence by the injection of a saline suspension of one-half the twenty-four hour growth on coagulated blood serum mixture subcutaneously into two guinea-pigs. One of these guinea-pigs received approximately 500 units of diphtheria antitoxin intraperitoneally. On the death of an animal, careful necropsy was performed and characteristic subcutaneous edema with hemorrhagic suprarenals noted in every positive case. The sixty-six cultures noted above were injected in this way. The toxicity of each virulent culture was confirmed by at least two subsequent tests.

Of the sixty-six cultures tested for pathogenicity, nine were found to be virulent diphtheria bacilli. This means a carrier rate at this camp of 0.83 per cent. One other culture, not included, possessed some virulence; it killed two of the three guinea-pigs into which it was injected.

There was opportunity to make second cultures from two of the students found to be positive. The findings were confirmed in both cases; second cultures from both the nose and the throat of each man contained virulent bacilli. There were no clinical evidences of diphtheria, although both had large tonsils—one, very large. Both thought they had had diphtheria several years before, but were not certain. One was Schick negative; the other was positive. The positive reaction was a typical, clearly cut + +, the redness on the right arm occupying an area about 1½ inches by 1 inch; the left arm showed no reaction whatever.

The Schick tests were made on seven of the students found to be carrying virulent bacilli. Of these, three gave + + reactions, two gave + —, and two gave — reactions (57 per cent. negative). In the literature we have seen no previous record of carriers giving positive Schick tests. Such findings would be looked for only in incubationary carriers, but these students gave no clinical indication of the disease during their four weeks at the camp. We have no satisfactory theory to account for such a combination, and hope that the opportunity may come to investigate it further.

Diphtheria Carrier Work.—The fact that we found nearly 1 per cent. of carriers of virulent diphtheria bacilli among healthy young men between the ages of 17 and 21 is not surprising. In one of the earliest (1894) surveys made in this country, Park and Beebe [1] found 2.4 per cent. They examined 330 healthy persons in New York City. None of these persons were known to have been in contact with diphtheria; of the eight found positive, two later developed the disease. Pennington [2] found that 1.4 per cent. of well schoolchildren examined by her in Philadelphia were harboring virulent organisms in their throats. Von Scholly and Wilcox [3] examined cultures from the throats of 1,000 noncontacts, and in 1.8 per cent. found virulent diphtheria bacilli; these were chiefly tenement house children in New York City, in two of which there was a possible history of exposure. In a more recent survey made in Detroit, Goldberger, Williams and Hachtel [4] found virulent bacilli in about 0.1 per cent. of 4,093 persons. These were unselected people not known to have been in contact with diphtheria.

These figures suggest work for future training camps, the results of which might be exceedingly illuminating. At Camp Meade it was possible to take cultures only once, and the time selected was that which would to the greatest extent eliminate the influence of camp conditions. Notwithstanding the fact that nearly 1 per cent. had diphtheria bacilli in their throats, no case of the disease developed. Does this mean that there was no transfer of virulent bacilli, or is there another explanation for the freedom from this disease of the 55 per cent. of Schick positive persons? The infectious agents were certainly not lacking, and according to our tests there was an ample amount of favorable soil. It would seem that the mechanism of defense of healthy mucous membranes is sufficient to prevent the production of the clinical disease, and that possibly another factor must be active since diphtheria has its highest incidence during those times of the year when common colds are most prevalent. It will be interesting at subsequent camps to make cultures a second time, or better at weekly intervals, in order to learn among other things whether or not the carriers are temporary or chronic, and to follow the distribution of virulent bacilli to the throats of other persons.

TESTS FOR SUSCEPTIBILITY TO DIPHTHERIA

The personnel available for the work was not sufficient to permit the injection of candidates at the time of "processing." It was therefore necessary to make the injection and subsequent examinations at times when those responsible for the military training would not be inconvenienced. For this reason, Schick tests could be made on only 833 persons.

Technic of Injections.—The Schick test material prepared by the laboratories of the New York City health board was diluted immediately before proceeding to the building where the injections were to be made. The toxin, contained in capillary tubes, was forced into sterile saline solution, the tubes being rinsed several times. Duplicate dilutions were made with the same lot of toxin and heated in a water bath at 75 C. for five minutes. The amount of the diluted toxin injected was 0.2 c.c. and, according to the directions accompanying the packages, this represented one-fiftieth minimal lethal dose for a 250 gram guinea-pig. The syringes used for the injections were of the all-glass, tuberculin type. In preparation for the injection, the flexor surface of the forearm just below the bend of the elbow was rubbed with gauze saturated with a mixture of

1. Park and Beebe: Diphtheria and Pseudo-Diphtheria, M. Rec. 46: 387-401, 1894.

2. Pennington, Mary E.: The Virulence of Diphtheria Organisms in the Throats of Well School Children and Diphtheria Convalescents, J. Infect. Dis. 4: 36-50, 1907.

3. Von Sholly, Anna I., and Wilcox, Harriet L.: A Contribution to the Statistics on the Presence of Diphtheria Bacilli in Apparently Normal Throats, J. Infect. Dis. 4: 337-346, 1907.

4. Goldberger, Williams and Hachtel: Report of an Investigation of Diphtheria Carriers, Bull. 101, Hyg. Lab., U. S. P. H. S., 1915, pp. 29-41.

equal parts of acetone and alcohol. The injections were made into the layers of the skin, a distinct bleb being produced in every case. Readings were made two days and seven days after the injections. The results were recorded as suggested by McGuire, Linthicum, Schirch and Nourse:[5]

Recording Results: The method of reading was that followed by Park and his co-workers. For the sake of brevity and convenience in entering results, we adopted the following symbols: + +, positive reactions; +, positive-combined reaction; + —, pseudonegative reaction; —, negative reaction.

The literature describes fully the positive, pseudonegative and negative reactions, but gives little concerning the positive-combined reaction, first noted by Park. This reaction consists of a pseudoreaction on the control side, with a positive reaction superimposed on a pseudoreaction on the test side. Some difficulty is encountered in distinguishing these two reactions at forty-eight hours, but with a little experience they may be easily differentiated at a later reading. The positive and positive-combined reactions indicate susceptibility, while the pseudonegative and negative reactions indicate immunity to diphtheria.

It is to be remembered that these symbols denote merely the type of reaction and do not indicate its severity; for instance, + + does not mean a reaction approximately double the intensity of that of +, but that in the former case the reaction was not complicated by a pseudo-element, while in the latter a positive reaction was superimposed upon a pseudo-reaction. Thus, + + and + indicate absence of antitoxic immunity, while + — and — indicate the presence of antitoxic immunity. Table 1 gives a summary of the results of the tests according to organization.

TABLE 1.—RESULTS OF SCHICK TESTS IN THE VARIOUS ORGANIZATIONS

Organizations	Reactions				Susceptible		Immune		Total
	++	+	+—	—	No.	%	No.	%	
Co. A, Inf.	32	8	17	19	40	53	36	47	76
Co. B, Inf.	29	14	22	20	43	50	42	50	85
Co. C, Inf.	29	9	12	29	38	48	41	52	79
Co. D, Inf.	36	12	13	28	48	54	41	46	89
Co. E, Inf.	8	3	6	7	11	46	13	54	24
Co. F, Inf.	39	10	5	28	49	59	33	41	82
Co. G, Inf.	21	6	7	14	27	56	21	44	48
Co. H, Inf.	48	13	4	39	61	59	43	41	104
Troop B, Cav.	15	3	7	7	18	56	14	44	32
Bat. A, Art.	30	9	4	16	39	68	20	32	59
Bat. B, Art.	20	7	2	14	27	66	16	34	43
Bat. C, Art.	31	5	4	19	36	61	23	39	59
Med. Co. No. 1	13	3	1	36	16	30	37	70	53
Totals	351	102	104	276	453	55	380	45	833

The high percentage of susceptibles found in this series—55 per cent.—is surprising. According to the findings of others, the percentage of susceptible persons between the ages of 17 and 21 should not have been above 20 to 30 per cent. It will be noted that Medical Company No. 1 actually did show 30 per cent. susceptible. For the marked difference, we have not been able to find an explanation. The injections were made simultaneously with those of other companies and although the men were living in separate barracks, surrounding conditions and type of work were not sufficiently different to influence the results.

We have carefully reviewed our work in an attempt to learn whether or not the high percentage of positive results obtained might be due to a fault of some kind. We believe that proper technic was used and that the reactions were in practically every case so cleanly cut that there could be no discussion with regard to the results; sometimes two, usually three persons read the reactions together. The strength of the toxin used was questioned. If possibly there had been in the capillary tubes a much larger amount of toxin, or if that present had been especially high in potency, the dose injected might have been not one-fiftieth minimal lethal dose, but one-thirtieth or even one-twentieth. In order to eliminate such a possibility, duplicate sample packages were submitted to the Hygienic Laboratory of the U. S. Public Health Service for test, and it was reported by Dr. McCoy that instead of being too strong, the product was approximately 15 per cent. low in potency.

We are therefore inclined to believe that, of the young men tested, 55 per cent. possessed no immunity to diphtheria detectable by the Schick test.

In view of the statements frequently made that persons in large cities are more likely to be immune to diphtheria than those from country districts, we thought it would be interesting to analyze our results on the basis of their residence, with regard both to the state and to the size of the community in which they lived; the analysis was extended to include age groups. The results of this analysis are shown in Table 2.

This is the well-known dichotomous chart, and gives all the information needed, we believe, for a thorough analysis of the results. From left to right the totals for each of the states from which the personnel at Camp Meade was derived are divided according to the size of the community, rural being less than 2,500. A rural community is generally considered to be one in which such sanitary arrangements as sewage disposal and controlled water supply are lacking. Communities between 2,500 and 10,000 are likely still to be of the rural type from the standpoint of sanitation. Those above 10,000 are frequently as well equipped as are cities of 100,000 and over.

At the bottom are shown the totals for the communities of these sizes. In the columns, the results are grouped according to ages. A very few boys less than 17 years of age found their way into the camp, but the proportion is insignificant. In the 20 and more group, about 10 per cent. were above 20 years of age. These were spread over so many different ages, however, that it was not thought worth while to make special note of them. The number of individuals showing reactions of the various types are recorded, as well as are the total number of positives, that is, those showing + + and + reactions, and the total number of negatives—those showing + — and — reactions, together with the percentages of those susceptible and those immune in each group.

At the right are given the totals for all ages analyzed with regard to types of reaction, and numbers and percentages of those susceptible and those immune.

At the lower right hand corner are the grand totals, the bottom line showing, as is noted in Table 1, that 55 per cent. were susceptible and 45 per cent. immune as indicated by the Schick test.

The figures in most instances are so low that the differences have no conclusive significance. The total number here is less than that in Table 1 for the reason that in every instance in which complete data were unavailable, the individual concerned was dropped. Although the figures are small, it is impossible not to call attention to the differences in susceptibility of persons living in rural Pennsylvania and those living in rural Virginia, the proportion of those immune in Virginia being constantly much higher than in Pennsyl-

5. McGuire, P. F.; Linthicum, E. S.; Schirch, G. J., and Nourse, J. D.: The Control and Prevention of Diphtheria in the U. S. Army Mil. Surgeon **50**: 525-533 (May) 1922.

vania. This fact is made still more interesting on examining the diphtheria rates in the two states, since it is found that the mortality rates in Pennsylvania have throughout the census period been higher than those in Virginia. The average temperature of Virginia is higher than that of Pennsylvania, which would suggest a reason for less diphtheria in Virginia; but it would not explain the great difference in the percentage of susceptible persons in the rural communities of the two states.

The form of Table 2 permits the recording of so much information in a small space that it is hoped no military importance. The results of this survey indicate that it is potentially a serious menace and one still far from final eradication.

EXAMINATION OF FECES FOR OVA OF THE INTESTINAL PARASITES

It was believed that information of interest might be revealed through a search for evidences of intestinal infestation in the particular group of men at this camp. The states represented, with the exception of Virginia, are just north of the region in which the hookworm is prevalent. In making the survey with the primary

TABLE 2.—RESIDENCE WITH REGARD TO STATE AND SIZE OF COMMUNITY, AGE GROUPS, TYPES OF REACTIONS AND PERCENTAGES OF SUSCEPTIBLE AND NONSUSCEPTIBLE PERSONS

Size of Community	Age Groups: 17 and Less								18								19								20 and More							
	Reactions				Susceptible		Immune		Reactions				Susceptible		Immune		Reactions				Susceptible		Immune		Reactions				Susceptible		Immune	
	++	+	+—	—	No.	%	No.	%	++	+	+—	—	No.	%	No.	%	++	+	+—	—	No.	%	No.	%	++	+	+—	—	No.	%	No.	%
Pennsylvania																																
Rural	24	2	2	4	26	81	6	19	13	1	2	5	14	87	7	33	6	1	4	5	7	44	9	56	15	1	1	1	16	89	2	11
2,500+	19	7	7	13	26	56	20	44	24	2	7	17	26	52	24	48	8	4	3	9	12	50	12	50	12	2	2	11	14	52	13	48
10,000+	16	7	5	10	23	61	15	39	18	6	3	9	24	67	12	33	4	6	3	8	10	48	11	52	9	4	8	7	13	47	15	53
100,000+	16	..	5	7	16	57	12	43	10	5	3	18	15	42	21	58	3	2	4	6	5	33	10	67	11	3	1	7	14	64	8	36
Total	75	16	19	34	91	63	53	37	65	14	15	49	79	55	64	45	21	13	14	28	34	45	42	55	47	10	12	26	57	60	38	40
Maryland																																
Rural	6	1	2	2	7	63	4	37	5	1	1	1	6	75	2	25	3	..	..	1	3	75	1	25	4	..	1	2	4	57	3	43
2,500+	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
10,000+	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..	1	..	..	..	..	..	..	2	..	..	2	..
100,000+	10	..	..	5	10	67	5	33	1	2	..	11	3	27	11	73	3	..	1	3	3	43	4	57	3	3	..	8	6	43	8	57
Total	16	1	2	7	17	65	9	35	6	3	2	13	9	38	15	62	8	..	1	4	8	62	5	38	7	3	1	12	10	42	13	58
Dist. Columbia																																
100,000+	6	4	2	6	10	55	8	45	8	4	1	1	12	86	2	14	3	..	2	4	3	33	6	67	4	2	1	2	6	67	3	33
Virginia																																
Rural	4	7	3	12	11	42	15	58	9	2	5	8	11	46	13	54	9	1	1	1	10	84	2	16	4	2	2	7	6	40	9	60
2,500+	1	1	2	4	2	25	6	75	5	3	1	2	8	73	3	27	..	..	1	..	..	..	1	..	3	..	1	4	3	38	5	62
10,000+	..	..	1	1	..	..	2	..	2	..	..	2	2	50	2	50	..	..	..	..	..	..	..	..	..	1	1	1	1	33	2	67
100,000+	..	2	..	1	2	67	1	33	..	..	..	1	..	..	1	..	1	1	..	1	2	67	1	33	..	..	..	3	..	..	3	..
Total	5	10	6	18	15	38	24	62	16	5	6	13	21	53	19	47	10	2	2	2	12	75	4	25	7	3	4	15	10	35	19	65
Totals																																
Rural	34	10	7	18	44	69	25	31	27	4	8	14	31	59	22	41	18	2	5	7	20	63	12	37	22	3	4	10	26	65	14	35
2,500+	20	8	9	17	28	52	26	48	29	5	8	20	34	55	28	45	9	4	4	9	13	50	13	50	15	2	3	15	17	49	18	51
10,000+	16	7	6	11	23	58	17	42	20	6	4	11	26	63	15	37	5	6	3	8	11	50	11	50	9	5	9	10	14	42	19	58
100,000+	32	6	7	19	38	50	26	41	19	11	4	31	30	40	35	54	10	3	7	14	13	38	21	62	18	8	2	20	26	54	22	46
Total	102	31	29	65	133	59	94	41	95	26	24	76	121	55	100	45	42	15	19	38	57	50	57	50	65	18	18	55	83	53	73	47

SUMMARY

Size of Community	Reactions: ++	+	+—	—	Susceptible: No.	%	Immune: No.	%
Pennsylvania								
Rural	58	5	9	15	63	72	24	18
2,500+	63	15	19	50	78	53	69	47
10,000+	47	23	19	34	70	57	53	43
100,000+	40	10	13	38	50	50	51	50
Total	208	53	60	137	261	56	197	44
Maryland								
Rural	18	2	4	6	20	67	10	33
2,500+	1	..	..	1	1	50	1	50
10,000+	1	..	1	2	1	25	3	75
100,000+	17	5	1	27	22	44	28	56
Total	37	7	6	36	44	51	42	49
Dist. of Columbia								
100,000+	21	10	6	13	31	61	19	39
Virginia								
Rural	26	12	11	28	38	49	39	51
2,500+	9	4	5	10	13	46	15	54
10,000+	2	1	2	4	3	33	6	67
100,000+	1	3	..	6	4	40	6	60
Total	38	20	18	48	58	47	66	53
Totals								
Rural	102	19	24	40	121	62	73	38
2,500+	73	19	24	61	92	52	85	48
10,000+	50	24	22	40	74	54	62	46
100,000+	79	28	29	84	107	51	104	49
Total	304	90	90	234	394	55	324	45

such studies made in the future will be analyzed in an identical manner in order that the results from year to year may be added, and figures finally obtained which will have definite significance. It is realized that in comparing rural Virginia with rural Pennsylvania on the basis of the figures we have so far, it is not possible to do more than call attention to a point to be borne in mind in future studies.

With regard to the susceptibility of persons from rural districts as compared with those from cities, it is seen that a greater proportion of the city boys were immune.

There is sometimes apparent an inclination on the part of some persons to consider diphtheria a disease of

object of ascertaining the number of carriers of hookworm ova, the finding of other parasites was likewise noted.

The technic used was that attributed to Barber.[6] Specimens were collected in new, clean homeopathic vials which were labeled and brought to the laboratory. Here about 5 gm. of the feces was thoroughly mixed with about 15 c.c. of saturated sodium chlorid solution containing 10 per cent. of glycerin. This mixture was allowed to stand generally from fifteen minutes to about two hours, when about 0.5 c.c. of the upper layer was transferred to a microscope slide on which had been

6. Medical War Manual No. 6, Laboratory Methods of the U. S. Army, Ed. 2, Philadelphia, 1919, p. 49.

made a large, heavy ring with a wax pencil. With the low power of the microscope, every part of the drop was examined thoroughly, a mechanical stage being used.

Specimens from 750 persons were studied. The ova found were: *Taenia solium*, 1; *Ascaris lumbricoides*, 5; *Trichuris trichiura*, 2; *Oxyuris vermicularis*, 1; hookworm, 1; total, 10, or 1.33 per cent. The single hookworm carrier was from rural Virginia. The person whose feces contained eggs of *Taenia solium* was brought to the hospital and treated. A large part of the tapeworm was recovered, but it was unfortunately thrown out before examination could be made. The chief point of interest at the outset, as already noted, was to learn how many hookworm carriers there might be among young men coming from what might be considered the border states. The finding of but one from a rural community in Virginia would be surprising were it not for the fact that the type of young man found in a military training camp is usually above the average for the community.

In such surveys it is customary to note the percentage of those who have lived in the tropics or who have had service overseas. A few of the students at Camp Meade had been in the army during the war, but their percentage was insignificant.

While numerous surveys have been made for the identification of persons harboring intestinal parasites, the only one with which we are acquainted in any way comparable with the study made by us is that of Kofoid.[7] In the survey reported by him, the findings among 126,140 men are given. These were men "who entered the army from the hookworm area, or had resided there for six months or more, or who had formerly lived in that area but emigrated to other states of the Union. . . . The data, therefore, are fairly representative of the normal population of males of military age only for states of the hookworm area and only those males of military age who in other states might have acquired the infection by reason of Southern residence."

The results reported by Kofoid among men born in the states from which those at Camp Meade were drawn are given in Table 3.

TABLE 3.—RESULTS REPORTED BY KOFOID

State of Birth	Positive		Number of Men Examined
	Per Cent.	Number	
Pennsylvania	0.3	4	1,074
Maryland	2.1	12	584
District of Columbia	1.6	2	121
Virginia	6.7	65	969

These results show a much higher infestation rate among men from the same localities. We cannot believe that differences in technic are responsible for the low rate found by us at Camp Meade. If it seemed necessary to account for our relatively low figures, we should probably call attention again to the superior type of the persons making up our group.

SEARCH FOR CARRIERS OF MEMBERS OF THE TYPHOID-PARATYPHOID-DYSENTERY GROUP

As soon as possible after the receipt of specimens of feces at the laboratory, a suspension was made in saline solution and a drop of this was streaked over the surface of culture mediums in two plates. One plate contained Endo medium, the other, lactose-litmus agar. In about half the cases these cultures were made within one hour after the collection of the specimens; in the other half, the delay was from one to five hours, so that dysentery bacilli of the Shiga type, if present, might have been lost.

The cultures were incubated at 37 C. over night and then examined in a good light, careful search being made for nonlactose fermenting colonies. The plates were then returned to the incubator, where they were kept for a second twenty-four hours and reexamined. Colonies which showed no evidence of acid formation were studied closely, and if they bore any resemblance to the organisms in question they were fished to a section of a lactose-litmus agar plate. About eight different colonies could be transplanted conveniently to a single plate. The use of a Petri dish, in this way, for the primary fishings, saves culture medium and infinite labor. The plates thus inoculated were incubated over night, and nonlactose fermenting colonies which were possibly gram-negative asporogenic bacilli were stained, fished to Russell double sugar agar, and studied further.

The few cultures deemed worthy of final identification were sent to the Army Medical School in Washington, where they were studied by Captain H. A. Davis, Medical Administrative Corps. He reported:

B 644 is a gelatin liquefier and is probably a member of the proteus group.

F 2 is an intestinal organism not fermenting lactose, and according to the classification of Graham-Smith would be placed in Group I, Subgroup d.

F 5 is of the same class and falls in Group H, Subgroup h.

I 44 is *Bacterium alkaligenes.*

39 is placed in the intestinal group as of Group H, Subgroup d.

78 is placed in the intestinal group as Group K, Subgroup b.

The result of this work is therefore that no member of the typhoid-paratyphoid-dysentery group of bacteria was isolated and identified from any of the specimens studied. It is in conformity with these findings that during the training period no clinical case of intestinal infection was reported.

SUMMARY

During the August training period at the Citizens' Military Training Camp at Camp Meade, Md., in 1922, a beginning was made to take advantage of the unusual opportunities for epidemiologic surveys thus afforded.

Cultures were made from the throats of 1,080 students, and these were studied for the presence of virulent diphtheria bacilli. In 0.83 per cent. of the cultures virulent diphtheria bacilli were found, indicating that nearly 1 per cent. of the young men coming to the camp carried virulent diphtheria bacilli in their throats.

The Schick test for susceptibility to diphtheria was made on 833 of the students, with the result that 55 per cent. of them reacted positively, indicating the absence of antitoxic immunity. In spite of this high rate of susceptibility and the number of persons in close association with them carrying diphtheria bacilli in their throats, no clinical diphtheria developed during the training period. Among seven of those found to be carrying virulent diphtheria bacilli, three gave positive Schick tests; the others were immune.

A study of specimens of feces from 750 of the students revealed parasites in ten, or 1.3 per cent. One of these, a young man from rural Virginia, was found to be a carrier of the hookworm.

7. Kofoid: The Geographical Distribution of Hookworm Infection in the United States, Detected in Army Recruits, Am. J. Trop. Med. 2: 389-396, 1922.

The same 750 specimens of feces were studied culturally for the presence of members of the typhoid-paratyphoid-dysentery group of bacilli, but no evidence of a carrier of a member of this group was discovered.

CONCLUSIONS

In concluding the report of this work, we express the hope that each year increased facilities may be given the Medical Department for carrying out surveys such as are indicated herein and for such extensions of the work as will be indicated from time to time. We believe that in no other way can the army better serve the public health; and building up the health of the nation is as much a measure of national defense as is drilling and target practice, on the one hand, or the production of gases and high power arms, on the other.

This plea can be supported in no better way than by quoting from the recent work by Nichols:[8]

> On the technical side, carrier work in the military services is of course the same as elsewhere, as the putting of a uniform on the host does not affect the parasite. There are, however, several special factors in epidemiology and administration among soldiers which do affect the work in a peculiar way. Personal contact is much closer and more constant among troops in barracks or in the field than among private citizens. Hence, the chances for the functioning of carriers are particularly good. On the other hand, diagnostic and control measures, when approved, can be carried out more exactly on account of military discipline. Again, the high standard of laboratory facilities which has been maintained in the United States Army since the days of Sternberg tends to make carrier work easier than in some other places. It may, therefore, be said that conditions in the Army, and the same is true of the Navy, offer unusual need and opportunity for carrier work. The drawbacks are lack of time for proper examination, lack of facilities for the mass of work, and lack of control due either to an emergency or to official non-support. . . .
>
> During the war, carrier work eventually reached a high state of technical perfection, as so many well trained medical officers and assistants were available. The degree to which the carrier program was actually used to control the situation varied with the circumstances. Now that the military establishments are contracted to a peace basis, this work has necessarily become limited. But since the work of the military organizations is now largely educational in connection with National Guard and the Reserves, the principles learned should not be forgotten. This new knowledge should be applied on as large a scale as possible, as a measure of education and preparation.

8. Nichols, H. J.: Carriers in Infectious Diseases (with a Chapter on Carriers in Veterinary Medicine by R. A. Kelser), Baltimore, 1922.

The Conduct of an Individual.—Human behavior is the outcome of an infinite complexity of interacting factors. The conduct of an individual could only be completely intelligible if we possessed a full knowledge of his inherited tendencies, his instinctive and emotional equipment, his intellectual capacities, and his general physical condition. In addition to this information, we should also have to obtain a detailed life history of the individual in order to understand the various habits and inhibitions which had been built up on the foundations of his physical, intellectual and emotional endowments. The most difficult subject which we should have to study in our search for an understanding of human behavior is probably that of the instinctive and emotional life, yet in the final analysis we should undoubtedly find that these factors outweighed all others in the causation of the conduct of an individual, so that we should be well repaid for our effort. There is no other single factor which has so much influence on the development of the personality as the parental environment—Abnormal Behavior, Sands and Blanchard, Moffat, Yard and Company, 1923.

STUDY OF ISO-AGGLUTININS BEFORE AND AFTER ETHER ANESTHESIA*

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According to Levine and Segall,[1] prolonged etherization may cause a temporary change in the iso-agglutinative phenomena. The authors report three cases in which the serum before anesthesia was compatible, by direct tests with the blood of prospective donors, but after a period of ether anesthesia of the patient, agglutinated the corpuscles when tested against the same blood. The change in agglutination was only temporary, but the observation, which should be extended, suggests that ether, being a lipoid solvent, may change the state of the blood in such a way as to modify the action of the iso-agglutinins present.

The observations of these investigators interested us greatly, as we had never observed untoward results from transfusions following ether anesthesia, when the bloods were matched before the operation. The studies reported in this paper were begun in an attempt to determine whether there was a change in the iso-agglutinative phenomena, and, if so, why we did not obtain noticeable effects on patients on whom transfusion was performed after prolonged ether anesthesia.

METHODS

Twenty-five patients about to undergo operation were selected for study. Cross-agglutination tests were performed on each of these patients, as follows: The serum of each patient was mixed in hanging drop preparations with fresh, washed red blood cells of Groups I, II, III and IV (Moss).[2] The washed red cells of the patients were mixed with the fresh serums of Groups I, II, III and IV. The serum and cells were obtained from the patients (1) before ether anesthesia; (2) immediately after operation, or before the patient recovered from anesthesia; (3) one hour after operation; (4) two hours after operation; (5) three hours after operation, and (6) twenty-four hours after operation. The microscopic tests were made in duplicate, as follows: A drop of each serum plus a drop of 1 per cent. suspension of the washed cells in isotonic salt solution was mixed on a cover slip, which was then inverted over a hollow ground slide. All red cells were washed three times with physiologic sodium chlorid solution. The slides were examined immediately to determine whether the preparations were satisfactory, again after one hour in the incubator at 37 C., and finally after twenty-four hours at 20 C.

The methods of examination of the blood as shown in Table 1 were used in the twenty-five cases studied.

Parallel series of tests were carried out in each case to determine the effect of ether in vitro. The serum of each of the Groups I, II, III and IV was tested against red blood cells of Groups I, II, III and IV.

* From the Biological Division of the Medical Clinic, the Johns Hopkins Hospital.

* Owing to its large size, Table 2 is omitted from the article as published here. It will appear in the authors' reprints.

1. Levine, E. C., and Segall, H. N.: Posttransfusion Reactions; Alterations in Blood After Ether Anaesthesia and After Blood Transfusion, Surg., Gynec. & Obst. **35**: 313 (Sept.) 1922.

2. Moss's classification is used for the reason that one is unable to distinguish in Jansky's descriptions Group II from Group III. A free discussion of this point by C. G. Guthrie and J. G. Huck will appear in the Johns Hopkins Bulletin, February, March and April, 1923, "On the Existence of More Than Four Iso-Agglutinin Groups in Human Blood."

The serums were shaken for one hour with ether. The ether was left in contact with the serums for four hours in the incubator at 37 C. After this time the serums were again tested against red blood cells (1 per cent. suspension) of each Group I, II, III and IV, and again four hours later.

TABLE 1.—FINDINGS IN CASE 1*

		Patient's Serum			Patient's R. B. C. 1% Susp.			
Time	Color of Patient's Serum	Known R. B. C. 1% Susp. Group	Reading After 1 Hr.; 37 C.	Reading After 24 Hr.; 20 C.	Known Serums Group	Reading After 1 Hr.; 37 C.	Reading After 24 Hr.; 20 C.	Group
Before operation	Yellow, clear	I	+	+	I	0	0	IV
		II	+	+	II	0	0	
		III	+	+	III	0	0	
		IV	0	0	IV	0	0	
Immediately after operation	Pink, clear	I	+	+	I	0	0	IV
		II	+	+	II	0	0	
		III	+	+	III	0	0	
		IV	0	0	IV	0	0	
One hour after operation	Yellow, clear	I	+	+	I	0	0	IV
		II	+	+	II	0	0	
		III	+	+	III	0	0	
		IV	0	0	IV	0	0	
Two hours after operation	Yellow, clear	I	+	+	I	0	0	IV
		II	+	+	II	0	0	
		III	+	+	III	0	0	
		IV	0	0	IV	0	0	
Three hours after operation	Yellow, clear	I	+	+	I	0	0	IV
		II	+	+	II	0	0	
		III	+	+	III	0	0	
		IV	0	0	IV	0	0	
Twenty-four hours after operation	Yellow, clear	I	+	+	I	0	0	IV
		II	+	+	II	0	0	
		III	+	+	III	0	0	
		IV	0	0	IV	0	0	

* Pyloroplasty; ether anesthesia; duration, two and one-half hours; +, agglutination; 0, no agglutination.

RESULTS

The findings in this series of twenty-five cases are decisive. In this series, in Table 2 are collected two patients of Group I, nine of Group II, four of Group III and ten of Group IV. In five cases the patients were started with gas followed by ether, and twenty-five patients had ether throughout. The duration of the period of anesthesia varied from one to four hours. In all cases the serum was found to have a pinkish tinge when collected immediately after operation, but at all other times it was a clear yellow. The ages of the patients varied from 16 to 65 years.

TABLE 3.—EFFECT OF ETHER

Group I Serum			Group II Serum			Group III Serum			Group IV Serum		
Known R.B.C. 1% Susp. Group	Reading after 1 Hr.; 37 C.	Reading after 24 Hr.; 20 C.	Known R.B.C. 1% Susp. Group	Reading after 1 Hr.; 37 C.	Reading after 24 Hr.; 20 C.	Known R.B.C. 1% Susp. Group	Reading after 1 Hr.; 37 C.	Reading after 24 Hr.; 20 C.	Known R.B.C. 1% Susp. Group	Reading after 1 Hr.; 37 C.	Reading after 24 Hr.; 20 C.
I	0	0	I	+	+	I	+	+	I	+	+
II	0	0	II	0	0	II	+	+	II	+	+
III	0	0	III	+	+	III	0	0	III	+	+
IV	0	0	IV	0	0	IV	0	0	IV	0	0
Shaken with Ether			Shaken with Ether								
I	0	0	I	+	+	I	+	+	I	+	+
II	0	0	II	0	0	II	+	+	II	+	+
III	0	0	III	+	+	III	0	0	III	+	+
IV	0	0	IV	0	0	IV	0	0	IV	0	0
In Contact with Ether 4 Hours			In Contact with Ether 4 Hours			In Contact with Ether 4 Hours			In Contact with Ether 4 Hours		
I	0	0	I	+	+	I	+	+	I	+	+
II	0	0	II	0	0	II	+	+	II	+	+
III	0	0	III	+	+	III	0	0	III	+	+
IV	0	0	IV	0	0	IV	0	0	IV	0	0

In no case examined did the blood groups change in any degree after ether anesthesia. As in Case 1, the blood group was determined to be IV by cross-agglutination with all four groups before operation. Immediately after operation, the blood group was determined to be IV; one hour after operation, the grouping was IV; two hours after operation, IV; three hours after operation, IV; and twenty-four hours after operation, the blood group was determined to be IV. The findings were the same throughout all cases examined, regardless of the group in which the patient's blood was placed.

No change in group resulted from the effect of ether in vitro (Table 3).

COMMENT

In none of our cases was the shift described by Levine and Segall observed. All the reactions remained definite in each instance. One hour's shaking with ether, and four hours in contact at 37 C., failed to produce any shifting of the blood in any of the twenty-five cases. Only one of the findings of Levine and Segall was corroborated in this series; viz., the serums of the patients had acquired after ether anesthesia a pinkish hue.

CONCLUSIONS

1. There is no change in the blood groups after ether anesthesia.
2. No change of iso-agglutinative phenomena was produced by shaking with ether for one hour, or four hours' contact at 37 C.
3. Transfusions can be performed safely within twenty-four hours after prolonged ether anesthesia, provided a suitable donor has been found previous to the beginning of anesthesia.
4. If severe reactions occur from transfusions after ether anesthesia, they are apparently due to some other cause and not to a change in iso-agglutinative phenomena.

CHRONIC INFECTIOUS ARTHRITIS*

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Modern notions concerning the influence of focal infections on the production of rheumatism may be responsible for a certain sense of security and of satisfaction with regard to the etiology and classification of this disease. Nevertheless, the subject of chronic infectious arthritis offers great difficulties from the standpoint of both clinical and experimental investigation.

The present study was undertaken for the purpose of inquiring into the classification of chronic infectious arthritis, the validity of the idea of focal infection as a cause, and the results of the usual nonspecific "shock" therapy.

It was thought that the investigation of a large number of records in a hospital such as Barnes Hospital might result in finding the answers to these questions, or in finding the refutation of certain notions usually accepted as accurate. Various attempts have been made to classify arthritis, but most classifications are unsatisfactory because the great majority of cases of chronic arthritis have been without proved etiology; therefore, classifications have been based on anatomic and symptomatic changes.

It might be convenient to separate the proved bacterial cases from those which, while possibly infectious in origin, have so far eluded our efforts to discover the invading organisms. Thus, we can easily understand those metastatic inflammations of the joints in which the exudate shows either staphylococci, pneumococci,

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hemolytic streptococci or gonococci, and then the great group of acute rheumatic fever cases stand out in relief by virtue of their characteristic clinical performance and the invariability of heart disease. With the great remainder, our efforts must be directed first to finding important points of difference which would suggest a classification, and to testing various forms of treatment, and, from the information thus gathered, to carry on our efforts in the experimental laboratory with the hope that with such diseases reproduced either entirely or in some of their main features, logical conclusions might follow.

The cases here reported were designated chronic infectious arthritis. It has been the habit at Barnes Hospital to exclude the proved bacterial cases from this classification, but it has also been the habit to designate the disease acute rheumatic fever as acute infectious arthritis without regard to its claim to distinct individuality.

It was my desire to study all the cases from the beginning of Barnes Hospital to the present. There are about 400 cases listed under the heading of chronic infectious arthritis, but the nature of the investigation demands so much of critical review of histories, of interpretation and of inferential conclusions, where justified, that the process of study turned out to be very laborious; therefore, slightly more than a hundred cases are ready for consideration.

As already stated, none of these studied cases gave positive bacteriologic findings as far as the joints were concerned. When the source of infection was proved, the proof was from clinical evidence and serologic tests.

METHOD

Each history was examined for information concerning the sex, age, duration of disease, occupation, family history, clinical course, physical examination, type of rheumatism present, treatment and outcome.

Most of the histories examined were written since 1913, but a few are included of patients who entered the hospital before Billings had popularized the idea of focal infection. It was interesting to note the difference in clinical attitude before and after the work of Billings. In the earlier histories, the examinations were meager; there was an evident lack of knowledge of attacking the problem, and this was invariably reflected in the word "unimproved" at the end of the history. After 1912 there was to be seen a sudden increase in the diagnostic activity devoted to the exploration of all localities which might harbor infection. Treatment was likewise more energetic, and the word "improved" began to appear more frequently. Then, as this energetic diagnostic effort and diversified treatment with bakes, vaccines, proteose and typhoid vaccine inoculations were carried on over a number of years, an element of doubt about the reality of the improvement became apparent. Indeed, not only have physicians passed through these changes of sentiment, but the patients themselves have often overestimated the relief which followed a given treatment, only to recognize later the fleeting character of the relief.

It is useful to study a series of cases of this kind because it reveals how important the doctrine of focal infection has been in stimulating physicians to search for and removed sources of infection wherever they might be in the body. Such a study also reveals the types of cases in which therapeutic failures occurred, and emphasizes the need of more penetrating research into the cause of disease in such cases. It emphasizes to no less a degree the successes that have occurred, and indicates the percentage of patients who have been benefited by sheer thoroughness in diagnosis and enthusiasm in treatment.

RESULTS

Twenty-four cases were chronic cases of arthritis which began as acute rheumatic fever. In nearly all instances the chronicity was dependent on neglect or inadequate treatment. All cases responded readily to salicylates, and the patients left the hospital "recovered," as far as arthritis was concerned. These cases can be readily separated from other types of rheumatism by this ability to recover and by the invariable coincidence of a heart disease, usually mitral stenosis. The statement that acute rheumatic fever is heart disease is strikingly illustrated in this group. The joint changes are trivial, and, although attended by intense inflammation, the arthritis is not permanent. This is a disease of early life, differing sharply in this feature from arthritis deformans. It occurs in attacks. Tonsillitis and pharyngitis usually precede its onset, and there is usually another case in the family.

One of the cases of chronic arthritis which began as acute rheumatic fever is interesting as suggesting a basis for certain joint symptoms and changes which will be commented on later:

A girl, aged 14, became ill in the usual way with pharyngitis, acute rheumatic fever, mitral disease and acute pericarditis, which persisted as chronic adhesive pericarditis. Such cardiac embarrassment obviously hindered both her muscular development and her general nutrition. We might call to mind, in passing, the peripheral joint changes associated with poor ventilation in the lungs and called pulmonary ostearthropathy. The patient began to have joint pains and stiffness several years after the onset of pericarditis. This pain and the stiffness were progressive, and when the patient returned to Barnes Hospital she was the picture of undernutrition and discomfort. She had no true arthritis, yet most of the small joints were stiff and painful.

The bone change was simple atrophy. Might it not be possible that inadequate circulation secondary to cardiac inadequacy is responsible for this atrophy? We are familiar with the pain that attends obliterating arterial disease; the joint pain suffered in this case, for which there is no explanation in the roentgenograms, may be based on circulatory deficiency.

In this connection, two cases in the series are worthy of attention: A man, aged 56, had had attacks of acute arthritis for eighteen years, usually involving knee or ankle. A man, aged, 47, had had similar attacks for twelve years. Both had purulent prostatitis; both had auricular fibrillation. The latter condition was adjusted with quinidin, and marked improvement in the arthritis, with relief of pain, followed. We might recall that many of our measures to relieve arthritis influence the local circulation. Such treatment as Bier's hyperemia, "baking" and perhaps the so-called "shock" treatment with its fever and increase of pulse rate achieves the same result.

The possible influence of circulation on joints is further suggested in a type of case familiar to all. This is the old person with evident arteriosclerosis who begins to have stiffness of the fingers, with subsequent thickening and slight distortion of the knuckles, these changes usually involving the toes as well. How much infection enters into this form of rheumatism cannot be estimated. There were four such cases in this series. The patients were 61, 69, 70 and 71 years of age; no foci of infection were found. The validity of this idea of the influence of circulation on conditions about the joints could be investigated experimentally.

We have noted the absence of change in the joints of acute rheumatic fever. In marked contrast are the roentgen-ray findings in gonorrheal rheumatism, of which there were three cases of long duration. This is fairly typical of any bacterial arthritis. Destructive changes in the cartilage are apparent. Infiltration of the periarticular tissues is extensive. We have found the gonococcus complement fixation test uniformly positive in these cases and in all our acute cases of this type.

Three cases of gout were present in this series, one of them being very well studied. This patient, a man, showed not only an increased uric acid, greater than usually found in arthritis, but incidentally displayed a certain degree of diabetes insipidus and an enlarged sella.

There were two cases of syphilitic arthritis characterized by exacerbation of pain at night. There were four cases of tuberculous arthritis—the typical spindle-shaped fingers. This leaves two groups of patients, one of which includes the cases of arthritis deformans, twenty-three in number, and the other, those cases not belonging to any of the mentioned groups, thirty-five in number, in which there was complaint of chronic rheumatism involving one or several of the larger joints, and in all of which the inflammatory character of the arthritis and the roentgen-ray changes spoke for bacterial invasion, even though this invasion could not be demonstrated.

The group of patients suffering from arthritis deformans presents the usual features emphasized in all clinical descriptions of the disease. Of the twenty-three cases, only three were in men. The average age at the onset was 39, and the average duration at the time of admission was nine years. In none of these cases was there a significant focus of infection. In nearly all, the teeth were reported as being in bad condition, but neglect of the teeth was inevitable. Frequently tonsillectomy was done, not because the tonsils were considered the source of infection, but because the consultant regarded tonsillectomy advisable in view of the prevailing adherence to the idea. Whatever future investigation may reveal, there is no basis in examination of these patients for believing that an infected focus is the cause of arthritis deformans. There is definitely another factor—perhaps the factor of a physical type, certainly the factor of age. The gradual onset of painful swelling of the fingers is characteristic. The visible changes are out of proportion to the meager roentgen-ray evidence of atrophy and hypertrophy.

The treatment of these cases has included tonsillectomy, extraction of teeth, treatment of nasal inflammations, bakes, Pemberton diet, inoculation with vaccines of streptococcus and of pneumococcus, and "shock" treatment with intravenous injection of proteose and typhoid vaccine. Frequently, after suffering chill and fever following typhoid vaccine, the patient has described improvement in the affected joints. This has proved transitory, and no other benefit has folowed any form of treatment used. A tuberculin test made in six of the cases was negative.

This brings us to the remaining cases, thirty-five in number, of chronic infectious arthritis. Unlike the preceding group, which began with painful stiffening of the fingers and toes, twenty-four of this group describe involvement of a large joint as the beginning of illness. This involvement is attended by outspoken periarticular swelling, frequently hot and red. The illness fluctuates in severity, but the patient does not recover entirely. Later on these patients may have the swelling and stiffness in small joints, and the impression is conveyed that the later development is of the nature of a superimposed arthritis deformans, or the senile type of arthritis referred to before. In this group the most exhaustive diagnostic search was made. The examination of every system, always by specialists, was made. Treatment included all the agencies mentioned before. In spite of exhaustive search, fourteen cases, or 58 per cent. of this class of cases, failed to reveal a source of infection that was convincing. The treatment was usually the same in those cases in which no satisfying focus was found as it was in these in which some important local infection was discovered. This is a very important point, as the study of the results in the two groups indicates. First, in the group in which a focus was found, the foci which seemed unquestionably associated with the development of arthritis occurred as purulent prostatitis three times; purulent seminal vesiculitis, once; purulent otitis media, twice; purulent cholecystitis, once; cholelithiasis, once; purulent rhinitis, once, and hemolytic streptococcus pharyngitis, once. The treatment given these patients, as said before, was similar to that given those patients in whom no focus was found, with the exception that the discovered focus was actively treated by irrigation or by removal. No improvement is reported in three of these cases. Cholecystectomy relieved the patient with purulent cholecystitis, and vasotomy relieved the arthritis in the patient with purulent seminal vesiculitis. In the group of patients in whom no important focus could be found, seven were reported improved, five unimproved, and two were not treated. Thus, it will be seen that there is very little difference in the effect of treatment of these two groups.

The part which tonsillectomy plays in the improvement of arthritic symptoms is interesting. This operation was frequently followed by relief, which, though temporary, was nevertheless definite to the patient and usually visible. It raises the question of nonspecific effect, and this is further suggested by the case of one of these patients in whom appendectomy was followed by similar definite, though temporary, relief. Perhaps the changes in the body incidental to anesthesia and hemorrhage, followed, as they usually are, by slight fever and leukocytosis, are not unlike the changes following the inoculation of typhoid vaccine.

With regard to the other forms of treatment, it may be said that baking was sometimes comfortable and sometimes disturbing as far as the patient was concerned. No definite effect on the rheumatism was noted in the history. The inoculation of proteose was always followed by a definite reaction; but, on account of the uncertainty of the chemical product, this mode of "shock" treatment was supplanted by the intravenous injection of typhoid bacilli. The usual initial dose was from 25 to 50 millions, repeated in ascending doses every five days so that at the end of about two weeks a patient might be receiving one billion bacteria at a dose. This increase in dosage was found necessary because, once inoculated, the patient invariably required greater doses to produce chill, fever and leukocytosis. Frequently, definite improvement could be traced to a series of such injections.

The influence of an intercurrent infection was noted in one of the cases of chronic infectious arthritis in which chronic proctitis seemed to be an important focal infection:

The arthritis was of the usual hypertrophic type, and involved the right elbow and right knee. The joint fluid, typical of this group of cases, was slightly turbid, yellow, and

contained about 5 per cent. of endothelial cells and 95 per cent. of polymorphonuclear leukocytes. Treatment of the proctitis for one month failed to change the arthritis. The patient became ill with a prevailing infection, characterized by headache and pharyngitis, which was loosely called grip. Fever prevailed for six days. The knee joint measured 37 cm. in circumference before this infection. A pronounced improvement of the arthritis was described by the patient, during this illness. Stiffness disappeared, and free movement was possible. The joint circumference diminished to 32 cm. and local thickening. Heat and congestion subsided. The leukocyte count was 11,000. Blood culture was negative. Throat culture showed a predominating gram-negative hemolytic bacillus, easily cultivated. After this infection subsided, the joints remained in good condition until the patient attempted their use, when the condition reverted to its original state.

Another interesting nonspecific effect was produced in another case of the same type of arthritis:

The knee was inoculated with 5 c.c. of 1 per cent. solution of gelatin having a p_H of 4.7. Local heat, swelling and pain followed. Fever of 100 F. persisted for three days. A leukocytosis of 20,000 occurred. Culture of the joint fluid was sterile. All the joint signs subsided, and the local condition was better than it had been in two years, according to the statement of the patient. The periarticular tissues were soft; the bony prominences were easily felt and were not tender. But when the patient attempted to use the knee, the previous condition of effusion, periarticular thickening, pain on use, and tenderness recurred.

It is unfortunate that we have not followed up these cases of chronic infectious arthritis in a way sufficient to show the present condition, and it is impossible to say how long the improvement recorded in this group of twenty-four patients has persisted. As a group, they offer encouragement to the effort to use all possible measures to discover infected foci. The high percentage of improvement recorded in those cases in which no focus was found seriously argues against the accuracy of our reasoning from cause to effect—from focus to arthritis. However, the subject is one which allows free play to philosophical discussion, but is one which, by the very nature of the process involved, evades accurate decision.

There remains to discuss eleven cases which, on account of their relative frequency and the uniformity of symptoms and invariable existence of active prostatic infection, invite our attention. These are patients, usually between the age of 35 and 50, who complain of backache. No doubt they have been told, in the absence of roentgen-ray evidence, that they had "sacro-iliac strain." The distribution of the lesion in these cases is remarkably constant, consisting, usually, of destructive changes in the fifth lumbar vertebra. Treatment consisted of active treatment of the prostate by massage and instillations, and immobilization of the lumbar spine. Good results occurred if the changes in the spine had not progressed to a high degree of destruction.

COMMENT

The most significant features of this study have been:

1. The emphasis given to the part which circulatory changes and consequent nutritional changes play in the production of painful stiffening of the joints in which simple atrophy is the only evidence on roentgen-ray examination.

2. The importance of exhaustive physical examination in the search for infected foci.

3. The necessity of employing many forms of treatment, since no form was constantly successful and each kind of treatment was occasionally successful.

4. The importance of the last described group of male patients whose chief symptom is backache and who have spinal ostearthritis, apparently associated with prostatic infection.

5. The lack of evidence that arthritis deformans is a focal infection.

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THE DIAGNOSIS OF CONDITIONS CAUSING BACKACHE

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Backache is one of the commonest of complaints. Etiologically considered, it is one of the most difficult to deal with. The sufferer often wanders from physician to physician, from urologist to gynecologist, from surgeon to orthopedist, from osteopath to chiropractor. Drugs of all descriptions, "patent" and legitimate, are taken; applications, operations, manipulations are resorted to without avail. Like a good old creditor, the backache stays with the patient sufferer.

It is true that a certain percentage of the afflicted are cured or relieved by medical or surgical intervention; that in other cases backache yields to the chiropractic touch or the magic influence of "science" of some kind. But is it not also a fact that many of these poor patients come again and again to the physician's office, only to be considered a nuisance by the one who is unable to help them, often through his own fault? And is it not true that in the field of industrial medicine, no other problem has resulted in more discredit to the profession than the failure in diagnosis and treatment of this condition? It is not willingness to help or sympathy which is lacking in the physician, but in no field of medicine is there greater ignorance as to cause and conditions, or more perfunctory practice regarding treatment than in dealing with the complaint commonly called backache.

Here, as in all other fields, it is only careful attention to little things and to petty complaints, scrutiny, observation and painstaking examination, which will save the reputation of legitimate medicine. Thorough knowledge and a broad conception of all the conditions that may bear on the question are the necessary requisites for any action. I take it for granted that the modern physician understands the practical mechanics of the spine; that he appreciates the importance of the lumbosacro-iliac junction as the supporting arch of the upper half of the body, and that he has at his command the aid of the modern laboratory and a skilled roentgenologist.

FACTS OF IMPORTANCE IN DIAGNOSIS

Since Lovett's[1] comprehensive article, the situation regarding backache has undergone some changes that are well worth noting. It is true the symptomatology has remained the same; the general classification—pelvic, traumatic, arthritic, static, sacro-iliac—still holds good. The "patent" medicine vender continues to reap his revenue and we are still, in many cases, "up against it," as far as diagnosis and treatment is concerned. But two facts stand out that the student cannot overlook:

1. Lovett states that backache is more common in women than in men. In his paper, he speaks occasionally

1. Lovett, R. W.: The Causes and Treatment of Chronic Backache, J. A. M. A. 42: 1615 (May 23) 1914.

of "her" when referring to the patient. From my own experience and the data available in the literature, it seems that there has been a shifting of sex incidence in backache coming under the observation of the orthopedic surgeon, with an apparent preponderance in men resulting. O'Ferrall,[2] in a clinical study of the cause of backache, cites thirty-four cases in men to six in women (laborers). Kuth,[3] among 208 cases, finds 136 in males and twelve in females (traumatic, seventy-five; nontraumatic, seventy-seven; and six after childbirth. In my experience I find one case of backache in women to approximately two in men. An explanation of this situation at first sight seems difficult. The most plausible reason is that backache in women most frequently is of pelvic etiology, and that women, becoming more and more acquainted with this fact, consult a gynecologist or general surgeon to begin with. On the other hand, the development of gynecologic diagnostic and therapeutic methods has resulted in women being subjected to corrective operative measures much more expeditiously than previously was the case, and thus in reducing the frequency of cases that in earlier days were not cured by "successful" operations. In other words, gynecology has become more popular and more efficient. But is backache from all other causes, extrinsic and intrinsic, more frequent in man than in woman? This rather interesting problem can be solved only by examination of a large, unselected material. An investigation of this sort will not only be interesting, but is also bound to be of great practical value, for it will throw light on a number of sanitary, social and economic conditions connected with causation and prevention.

2. The second fact may be summarized by the statement, based on observation during the last few years, that development and exploitation of modern diagnostic means and closer scrutiny of their revelations have resulted in the recognition of causes for backache which, up to the time of Lovett's writing, had appeared rather vague or were insufficiently known. I need refer only to the studies regarding osseous malformations, focal infections, and the like. On the other hand, close criticism of our findings has convinced us of the numerous shortcomings of our technical means of detection, e. g., comparison of roentgenograms with the actual pathologic condition.[4] In this connection, much is open to further investigation.

NATURE OF EXAMINATION

The conclusion to be drawn is of paramount importance: Every patient coming to us for treatment for backache must be subjected to a most systematic and careful examination. This point cannot be emphasized too strongly. It is not sufficient to hear the patient's complaint, to apply a few palpatory or functional tests, and then dismiss him with a drug, a liniment or a pelvic "support." That is exactly what the quack is doing. By this method, symptoms are frequently relieved; but the cause, as a rule, persists. The patient drifts from bad to worse, and the physician brings condemnation not only on himself but, what is infinitely worse, also on the whole profession. Superficiality and snapshot diagnosis, merciless as the statement may appear, constitute the arch sin committed against the backache sufferer in my experience, not only by the general practitioner but also by many a busy orthopedic surgeon.

In order to avoid the numerous pitfalls, it is indispensable to have the patient remove the clothing. A careful survey must be made both with the patient standing up and with him lying down. Close cooperation by the internist, gynecologist, urologist, orthopedist, roentgenologist and laboratory man is in many cases the only way to expeditiousness and success. A routine scheme, as outlined below, will prove most useful and will result in a possible diagnosis by a process of elimination rather than by a process of election, whch is only too liable to lead to a loss of time and to failure. It may seem far fetched, cumbersome and time consuming to launch on such a comprehensive scheme as the one proposed. My experience and failures have taught me that the procedure pays in the end, and that the investigation can be accomplished in a very short time, once the mind is trained to proceed in a systematic manner. Many authors who have carefully gone into this question are supporting me in this plea for thoroughness and system.[5] A careful anamnesis in the great majority of cases will immediately suggest a definite course. But we must always bear in mind that the case under observation may present a combination of any two or more causes, and that there is the possibility of referred symptoms. The accompanying tabulation, adopted by me, is self explanatory and is recommended to any one called on to solve a difficult problem of this sort.

Generally speaking, in examining patients suffering from backache I have found it most useful always to bear in mind three points: (1) that one must, as Kidner[6] puts it, so pointedly, "get rid of the old idea of the inherent stability and strength of the lower lumbar spine and the pelvic girdle, and to look at it as a particularly unstable and complicated mechanism with

CAUSES OF BACKACHE

Extrinsic (remote)

Gyneco-logic	Genito-Urinary	General Abdomen	Nervous System	Constitutional
Displacement	Bladder	Constipation	Meninges	Diabetes
Inflammation	Prostate	Inflammation	Medulla	Toxemia
Tumor	Seminal organs	(appendix,	Peripheral	Bacterial
Pregnancy	Ureters	etc.)	nerves	Alcohol
Coccygodynia	Kidneys	Tumor		Lead
Organic		Visceroptosis		Neurasthenia
Nervous		Hernia		Hysteria
		Hydrocele		Endocrine
		Varicocele		Myalgia
		Rectal disease		

Intrinsic (direct)

Congenital	Static	Traumatic	Inflammatory	Neoplastic
Irregular ossification	Large abdomen	Strain (sacro-iliac)	Syphilis	Sarcoma
Sacralization	Slumped attitude	Sprain	Pott's disease	Carcinoma
Fifth lumbar	Curvature of spine	Dislocation	Sacro-iliac tuberculosis	
Defects	Rachitic	Fracture	Infectious disease	
Rib formations	Osteomalacic	Postoperative	Pneumonia	
	Scoliosis		Typhoid	
	Spondylolisthesis		Gonorrhea	
	Tilting of pelvis due to		Actinomycosis	
	a. Inflammation of lower extremity		Osteomyelitis	
	b. Paralysis of lower extremity		Spondylitis deformans	
	c. Deformity of lower extremity		Neuritis (herpes zoster)	
	Weak foot		Neuroradiculitis	
	Contracted gastrocnemius			

2. O'Ferrall, J. T.: Low Back Pain—a Clinical Study of Its Cause, J. Bone & Joint Surg. **4**: 384 (April) 1922.
3. Kuth, J. R.: A Study of Two Hundred and Eight Cases of Lower Back Pain, J. Bone & Joint Surg. **4**: 357 (April) 1922.
4. O'Ferrall, J. T. (Footnote 2); Magnuson, P. B., and Coulter, J. S.: Workman's Backache, Internat. Clin. **4**: 215, Series 31, 1921. O'Reilly, A.: X-Ray Findings in Cases of Painful Back, J. Missouri M. A. **18**: 440 (Dec.) 1921.
5. O'Ferrall, J. T. (Footnote 2), and Palmer, M. B.: The Lumbar Spine and Sacro-Iliac Joints, Am. J. Roentgenol. **9**: 16 (Jan.) 1922. Albanese, A.: Better Knowledge of Bertolotti's Syndrome, Chir. d. org. di movimento **5**: 577 (Dec.) 1921. Holland, G. T.: Note on Sacralization of the Fifth Lumbar Vertebra, J. Bone & Joint Surg. **4**: 215 (April) 1922. Boyd, W. A., and Seibels, R. E.: Backache as Related to Gynecologic and Orthopedic Conditions, J. South Carolina M. A. **18**: 261 (Sept.) 1922. Kidner, F. C.: Disturbances of the Lumbar Spine and Pelvic Girdle, in Jones, Robert: Orthopedic Surgery of Injuries, New York, Oxford University Press.
6. Kidner, F. C. (Footnote 5, sixth reference).

many and rather weak points"; (2) that anatomy and function of the lumbosacro-iliac apparatus is by virtue of its connection and location especially liable to be secondarily affected by alterations of all structures surrounding and supporting it and supported by it, with the result of mechanical, inflammatory and productive changes; (3) that many cases are associated with neurasthenia and psychasthenia, which are liable to exaggerate or misrepresent local symptoms. It is therefore advisable to test possible hypersensitiveness of the patient by pressure on the styloid process. This "trick" has given me many times a pointer as to the evaluation of complaints.

ETIOLOGY

In reviewing the numerous possibilities in the etiology of backache, experience has shown me that there are five conditions which are quite frequently overlooked, because they and their connection with pain in the back are insufficiently known, or else the facts making the diagnosis are at times difficult to establish. These conditions are (*a*) of a genito-urinary nature (small concrements, chronic prostatitis); (*b*) toxemias (focal infection); (*c*) weak foot (flatfoot); (*d*) malformations (especially of the fifth lumbar vertebra), and (*e*) myalgia. As to their significance as regards the matter under discussion, there can be no doubt. They all occur in daily practice, and often do not present, especially in the beginning, any other symptom but backache.

(*a*) There is perfect agreement that the treatment of a patient who has a small stone in the ureter or a chronic prostatitis with measures to cure a local backache is inexcusable. It is true, the prostatitis may gradually get better or the stone may pass, and with it the backache may disappear in spite of the mistaken diagnosis and treatment. But where does such practice differ from that of the quack? An excellent means of avoiding this pitfall is a routine microscopic examination of the urine in every case of backache.

(*b*) The same principle holds true of the toxemias. In our age and generation, one would think that every physician would carefully examine each patient's teeth and throat, and that he would try to discover the focus in the pelvic organs before writing a prescription for a liniment or for acetylsalicylc acid. Still, our daily experience proves that such is not the case. I agree in every respect with Gardner,[7] who emphasizes the fact that, in every case of suspected focal infection, "a full mouth examination not only is necessary, but is the patient's due," the dental report to be based on complete mouth roentgenograms and the clinical evidence. How many sufferers from backache could have been cured by this practice in the beginning of their troubles, while their treatment proves to be most difficult after secondary changes have firmly established themselves in the structures of the backs. In this connection, it is well to remember that syphilis is not always proved by a positive Wassermann reaction. I have seen a number of persons suspected of syphilis with a persistently negative Wassermann reaction, who responded quickly to treatment with yellow mercurous iodid.

(*c*) According to our experience, weak foot, especially in the beginning, is often associated with backache. A recent summary of the physical status of four million recruits for the late war shows that among individual defects flatfoot ranged far ahead of anything else (11.7 per cent.), and as a cause for rejection, it amounted to 3.6 per cent. Thus, flatfoot, and weak foot still more, are astonishingly frequent disorders. The cases in which persons having weak feet were treated for backache were numbered by the thousands. Once a physician has learned to regard the whole body as a static unit, the mechanics of a single part of which cannot be disturbed without bringing disarrangement and strain on more remote links of the chain, this situation will automatically be remedied. In the reconstruction camps of the U. S. Army during the war, an encouraging beginning was made in the systematic diagnosis and treatment of this condition, which no doubt will have its effects in emphasizing, in civil practice, the relation between weak feet and backache. Easy as the diagnosis of weak foot may appear, in this connection I wish to emphasize the fact that the functional test as generally carried out, with the patient balancing the weight on one foot, is ineffective and altogether misleading. To most persons, this position is an unnatural one, and therefore, in order to maintain it, they make unusual and incoordinate efforts, with the result of forced innervation of muscles which, under normal conditions of weight bearing, would remain more or less inactive. Thus, for instance, a weakened tibialis anticus, during an examination of this kind, may elevate a sagging longitudinal arch and lead to the assumption that the arch is really efficient, while, on ordinary walking and standing, it is not. This deception is preeminently liable to occur in incipient cases of weak foot. Boigey[8] reports a similar observation on excessive weight bearing. In our case, we have, in addition to the heavier load, the effort of the patient to maintain balance. In testing for weak foot, it is therefore my procedure to let the patient throw his weight on only one foot, just as he would in the process of a slow walk, while the other foot remains on the ground and serves to maintain the balance of the body. This method gives a far clearer and more accurate picture of the existing weakness of a foot.

(*d*) Skilful modern roentgen-ray diagnosis has thrown considerable light on the backache due to abnormalities of the spine and sacrum. The frequency of these malformations is surprising. Baetjer and Waters[9] report that, in 1,000 cases of examination of the lumbosacral region, there were 15 per cent. of congenital nonunion of the sacral laminae. Rib formations in connection with the fifth lumbar vertebra are also an occasional occurrence. The most interesting abnormality in this region, also quite frequent, is the so-called sacralization of the fifth lumbar vertebra, of which Imbert[10] differentiates three degrees, according to the greater or lesser size of the transverse process, and its more or less complete contact with the ilium or sacrum (sacralization or pseudosacralization). The authors[9] mentioned say that "this abnormality generally gives symptoms." Considering that the fifth lumbar vertebra is the last link of a movable chain, and that it acts as a buffer between the spine and the pelvic girdle, and taking into account the intimate relation of this vertebra and the sacrum to many structures, it is not surprising that clinical diagnosis, together with roentgen-ray findings, has developed the interesting fact that congenital anomalies in this region predispose to injury, with resulting back symptoms. The understanding of Bertolotti's "painful sacralization" syndrome

7. Gardner, B. S.: The Examination of Teeth in Group Medicine, Minnesota Med. **5**: 356-359 (June) 1922.

8. Boigey, M.: Observations on the Various Modes of Locomotion of Man, Presse méd. **30**: 1461 (Sept. 2) 1922.

9. Baetjer, F. H., and Waters, C. A.: Injuries and Diseases of the Bones and Joints, New York, Paul B. Hoeber, 1921, pp. 316-317.

10. Cottalorda, M. J.: The Fifth Lumbar Vertebra, A Clinical and Roentgenologic Study, Marseilles méd. **59**: 382 (April 15) 1922.

rests on the recognition of this important connection. Léri,[11] however, says that even a pronounced degree of sacralization revealed by roentgenography is rarely the cause of pain. Albanese,[12] recently after drawing our attention to the fact that many of these cases are misdiagnosed and mistreated, points out that Bertolotti's syndrome always means sacralization, but that sacralization does not always mean Bertolotti's syndrome. This, in my experience, states the case correctly, and may be applied to any congenital malformation of this region in relation to injury. The term injury does not necessarily imply trauma of a serious character. The ordinary wear and tear or increased taxation of the abnormally developed bones, joints and ligaments is sufficient at times to invite the changes necessary for trouble in such a locus minoris resistentiae. The observations of other authors as reported in the recent literature confirm me in this statement.

O'Reilly,[13] in two recent roentgen-ray studies, rightly emphasizes the importance of the relation between congenital malformation of the lumbosacral region and industrial accidents, injury, strain and backache. Approximately 50 per cent. of persons showing abnormalities of this region have not, and probably never will have, back symptoms if there is no additional strain or trauma; but observations seem to point to the fact that they have a potentially weak spine, predisposing to strain and subsequent backache. Sooner or later, this fact will have to be considered in the examination of prospective laborers, and in the evaluation of industrial accidents and determination of compensation connected with them. On the other hand, the roentgen-ray finding of a congenital abnormality must, in case of backache, lead us to assume that the cause of the pain is located in the lumbosacro-iliac apparatus, even if the roentgen ray does not show anything else, provided we can definitely exclude all other causes. In other words, I am joining Léri[11] in his warning that sacralization and other abnormalities, while receiving due consideration, must not be called to account for all sorts of pathologic conditions.

Seat of predilection of lumbosacro-iliac myalgia.

(e) The last cause for backache—not an infrequent one, if we look for it—to be considered within the scope of this treatise is myalgia. It is sometimes called muscular rheumatism, myositis, neuralgia or myogelosis. The theory that myalgia is due to three causes: direct infection, bacterial toxemia, or pyemia must, according to recent investigations concerning the colloidal nature of the tissues and the hydrogen ion concentration of the body fluids, be enlarged to include also changes of a chemical nature in the muscles. The investigations referred to show that there is a close relationship between the processes taking place in the condition under discussion and the muscle changes in rigor mortis, through accumulation of fatigue products, with the production of lactic acid.

PREDISPOSITION

According to these observations there are three types of persons who have a so-called rheumatic constitution: (1) the asthenic type, pale, tall, narrow chested, with poor circulation; chlorotics; lymphatics; spasmophilics; (2) the hereditary adipose type; diabetics; those suffering from hypophysial adiposity, adiposis dolorosa, purpura; (3) individuals showing the uric acid diathesis. These three types of patients, under the influence of daily life, changes of temperature and barometric pressure, overfatigue, overstrain or exposure of any kind, are liable to develop myalgias.

For the diagnosis of these myalgias, it is of paramount importance to know where to look for their source, and to palpate the muscle in the suspected area in order to discover the small circumscribed hardenings (often the size of a pit of a date) that are the cause of the trouble. Next to myalgias in the shoulder and elbow region (brachialgia), the myalgia in the lumbosacral region (the lumbago proper) is the most common manifestation of this disease. The seat of the pathologic condition in such a case is generally to be found in the lower end of the erector trunci muscle, and especially deeply situated in the angle formed by the iliac bone and the lowest part of the lumbar spine. In quite a number of cases of so-called sprain of the lumbosacral ligaments, strain due to fatigue and weakness, or occupational and postural strain, I have been able to demonstrate the myalgic nodules deep in the lumbosacro-iliac angle. At times, the lesion may be found a little higher up on the outer or inner side of the long back muscles and in the posterior superior part of the gluteus maximus. Men and women are similarly affected; but in every case we have to deal with people of poor muscular development.

The diagnosis rests on the type of patient affected, the demonstration of the nodulation in the muscles, always painful on carefully increased pressure, and often the presence of a more or less hypersensitive area of skin directly over the affected muscle area. Often one may elicit a history of, or may discover, myalgic spots in other parts of the body at the time of the examination.

On the whole, this condition, up to this time, has been insufficiently known and little looked for. Most patients subjected to home treatment in the beginning yield to antipyretics, heat and massage, and therefore never come to a physician for a diagnosis. But, many patients suffering from the chronic form of this trouble have been subjected to all kinds of unsuccessful treatment, because the condition was not looked for or was unrecognized.

TREATMENT

This leads to the question of treatment. The genitourinary causes of backache must be left to the urologist. Those due to toxemias will generally yield to treatment of the focus, plus general measures. Backache in connection with anomalies of the lumbosacro-iliac apparatus is opening up a vista regarding prophylaxis, while the treatment is essentially of an orthopedic character. Pain in the back due to weak feet disappears like magic with attention to the fundamental pathologic condition. The lumbago of a myalgic character, once it has become chronic, is amenable to treatment only by proper massage of the affected part of the muscle, vigorously applied to strong muscles, but gently to weak muscles, and above all by injections of saline solution, with or without procain, into the individual nodule. Attention to the general condition of all patients is of equal, if

11. Léri, A.: The Fifth Lumbar Vertebra and Its Variations, Presse méd. **30**: 158 (Feb. 22) 1922.
12. Albanese, A. (Footnote 5, second reference).
13. O'Reilly, A. (Footnote 4, third reference): X-Ray Study of the Lumbosacral Spine, Southern M. J. **15**: 217 (March) 1922.

not superior, importance. But above all there must be assured the protection of a definite diagnosis.

CONCLUSIONS

1. The essentials for an etiologic diagnosis in cases of backache are system and thoroughness in examination.
2. The search for remote causes and for those of local character is of equal if not greater importance.
3. Congenital anomalies of the lumbosacral region predispose to injury, with subsequent backache.
4. Lumbago proper or lumbosacro-iliac myalgia is one of the most frequent and least recognized conditions.
5. In every difficult case, the establishment of a diagnosis depends on close cooperation of the various diagnostic branches of medicine.

BLOOD TRANSFUSION BY THE CITRATE METHOD IN HEMORRHAGES OF THE NEW-BORN *

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The use of whole blood injections is a well recognized clinical procedure in cases of hemorrhage occurring in new-born babies. Several methods have been devised for this procedure, all of which have certain features to recommend them. The simplest method is the use of subcutaneous or intramuscular injections, from 10 to 20 c.c. being employed at a time. These are often repeated two or three times in a given case, if the primary injection is not successful in arresting the hemorrhage. This is a perfectly safe method, and can be carried out under any circumstances by a physician of ordinary skill. The objection to its routine use is that frequently cases fail to respond favorably; moreover, such injections are frequently painful and irritating to the recipient.

A second method is the direct transfusion through anastomosis of veins by means of cannulas, the median basilic vein of the donor being united to the external jugular of the baby. This method is good, but is rather cumbersome. It requires the use of trained assistants, and not a little skill in blood vessel surgery for its successful accomplishment. The amount of blood transferred is not accurately measured, but must be judged by the change in color of the baby and thus approximated. It has the advantage that nothing but blood is injected, which avoids all possible danger of toxic reaction due to anticoagulants.

A third method is the injection into the longitudinal sinus by means of syringe or buret of whole blood, either with or without the addition of citrate to prevent clotting.

This method is used especially by pediatricians, and in the hands of one doing this kind of work is doubtless very satisfactory. For the general practitioner, however, the procedure is considered too formidable unless he has had some special training along these lines. The objection advanced is that one cannot be sure that the needle is in the lumen of the sinus throughout the injection, even if it is there when the injection is begun. I have seen one case at necropsy, after injection by a man who claimed that he had had considerable experience in the use of this method. A large hematoma was found under the dura. The needle had evidently penetrated the side wall of the sinus after the injection was begun. Numerous other reports of similar accidents are on record.

Fourthly, various substances other than whole blood have been used in this type of case, with indifferent results: horse serum, blood coagulants and human serum, either of the father or the mother of the child or of some person not a blood relative. The general experience has been that they work very well in the mild cases, but frequently fail in the severe form of the disease.

It would seem, therefore, that the use of whole blood in these cases is the only reliable way to stop the bleeding. If this could be done in a simple and safe method that is not too complicated for the average surgeon, a marked advance would be made in the treatment of these cases. It was in the hope of developing such a method that I undertook this piece of investigation.

It seemed reasonable that, if the peripheral veins were not too small, their use would be advisable, because any one familiar with the procedure in adults would be better able to acquire the technic in babies. In discussing the question with the pediatricians, however, I was told that the peripheral veins were too small, and that the method was impracticable. The same opinion was advanced by the men doing the direct transfusion. However, the dissection of a number of veins in bodies that I saw postmortem proved beyond a doubt that these veins could be used if the proper instruments and technic were employed. Losee [1] mentions this fact in an article on the use of blood transfusion in cases of severe hemorrhages in infants. He does not describe his technic. Bamberger [2] describes a case in which he successfully used the median basilic vein.

INSTRUMENTS

Two pairs of fine rat-tooth tissue forceps	One buret
Two pairs of mosquito artery forceps	One rubber catheter, 18 inches, as connection
One pair of iridectomy scissors	One constrictor for donor's arm
One scalpel	One small syringe for injecting procain
One large bore bleeding needle	One skin needle and horsehair
One pair of ordinary scissors	Ten c.c. of a 2 per cent. solution of sodium citrate
One Luer needle No. 19	One tube of No. 0 catgut
One 4-ounce glass graduate and stirring rod	Special board to hold baby

The median basilic vein was first selected as most accessible and presumably the most satisfactory. After it had been used on several occasions, however, it proved to be so small that a very fine needle had to be used to insert into the vein. This resulted in a very slow flow of blood, when the gravity method was used, making the procedure very tedious and sometimes resulting in coagulation of the blood before the completion of the operation. These difficulties were especially seen in premature infants.

The external jugular vein was therefore selected because of its size, and also because of its accessibility. It is located just under the platysma muscle, and can be easily exposed by a small incision through the skin and muscle. It can readily be seen when the baby cries. The femoral or long saphenous vein has been

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1. Losee, J. R.: Bull. Lying-In Hosp., New York **12**: 100 (July) 1922.
2. Bamberger, A.: Illinois M. J. **39**: 27 (Jan.) 1921.

mentioned in this connection, but was not used in this series because of the inevitable soiling of the wound postoperatively by urine and feces.

The citrate method was selected because of its simplicity, and because probably more men are familiar with its use than with other methods. There is very little, if any, danger of a toxic reaction from the small amount of the drug used in a single injection.

TECHNIC

Since the object of this work was to develop a method that would be practicable under almost any circumstances for men of average skill, the equipment has been made as simple as possible for efficient work. Only a few instruments are necessary, but they must be good and of the right kind.

For the special holding board, an inch board about 20 by 10 inches is used as a base. Across this, about 4 inches from one end, is set another piece of inch board 2 inches high, called the neck board. A series of ½ inch holes are drilled in the base board about 2 inches from the edges and about 4 inches apart, through which bandages tied to the baby's ankles and wrists can be passed. The baby is thus secured to the board.

The baby is placed back down on the board so that the neck board comes under the back of its neck, and the hands and ankles are secured as mentioned above.

The head is then held rotated to one side by a nurse or assistant. This exposes the region of the opposite external jugular vein. In cases in which transfusion is indicated, the condition of the baby is such that it offers, in most cases, little resistance or objection to being placed on the board.

It is advisable to have a long narrow bore glass tube as a buret, and we find that the glass portion of the Asepto irrigating syringe works very well. We have also used the barrel of an ordinary 20 c.c. Luer syringe for this purpose. The object of having the buret long and slender is to facilitate observation of the rate of injection, since the flow of blood through the fine needle is necessarily slow.

The needle used must not be sharp pointed because of the tendency to cut and tear the wall of the vein. For this reason the ordinary Luer needle is made blunt by grinding the point down with an emery wheel.

Before the operation begins, it is well to have everything in shape to complete it without delay. The importance of this point is that if there are delays, a certain amount of clotting is liable to occur, which interferes with the flow of blood through the small needles that it is necessary to use in this work.

The donor's arm is prepared for venipuncture in the usual way, and is painted with iodin. A 12 inch No. 0 catgut ligature is doubled, and the ends are grasped by mosquito forceps. The skin over the external jugular is painted with iodin followed by alcohol, and the region of the vein injected with a small amount of procain or apothesin 1 per cent. solution. The vein can be readily seen in most cases, especially when the baby cries.

A few minutes are allowed for the anesthetic to take effect, and then a small incision is made about an inch in length along the course of the vein through the skin and platysma muscle. In infants that have had a severe hemorrhage, the vein may be hard to find, owing to the collapsed condition. The baby will usually cry, however, and this will give the needed distention. After exposure, the vein is grasped very gently with fine artery forceps, and carefully cleaned of perivascular connective tissue. The importance of this point is that the vein cannot be properly opened, nor the needle easily inserted, unless the vein wall is quite free. The vein is next lifted up, and the double ligature passed underneath. This is sometimes facilitated by passing a grooved director before passing the ligature. The loop in the catgut is then cut, giving two ligatures under the vein. The ends of each ligature are caught in mosquito forceps. One ligature is drawn upward and the other downward so that the segment of the vein that is to be opened is raised clear of the wound, and all circulation in it is stopped. At this point the vein is dropped back into the wound, and a pad soaked with salt solution is placed over the incision to prevent drying.

The blood is now obtained from the donor in the usual way, a large bleeding needle being used with a 6 inch rubber tubing attached, into the 4 ounce graduate containing 10 c.c. of a 2 per cent. solution of sodium citrate. The blood is constantly stirred during collection, and until it is ready to be poured into the buret, thus insuring thorough mixture with the citrate solution. In donors with fine veins or in subjects in whom the arm is very fat, conditions frequently encountered in women, the vein is transfixed by a fine cambric needle to prevent rolling when the puncture is made.

After the collection of the blood, the salt solution pad is removed from the baby's neck, and the segment of the vein between the ligatures is raised clear of the wound. The vein is next incised half way through its diameter with the fine iridectomy scissors. Ten cubic centimeters of physiologic sodium chlorid solution is placed in the buret, which is connected to the No. 19 Luer needle by an 18 inch rubber tubing about the size of the ordinary rubber catheter. This needle must have a blunt point, which prevents injury to the vein wall during the insertion. When it is seen that the salt solution is flowing freely through the needle, the opened segment of the vein is lifted up, and a stream of salt solution from the needle is directed at the hole in the vein. This dilates the hole and materially aids in the introduction of the needle into the vein. The proximal ligature is slightly relaxed as the needle enters the vein, and then drawn taut after the insertion of the needle. The needle is thus held in place.

The salt solution is allowed to flow into the vein; when it is seen that a good flow is established, the citrated blood is poured into the buret by the assistant, and the buret kept filled until all of the blood has been injected. The last of the blood is followed by a few cubic centimeters of salt solution. The needle is then withdrawn, and the vein is tied off above and below the opening with the tension ligatures mentioned above.

The wound is closed by one catgut ligature in the platysma, and a subcuticular horsehair suture in the skin. It is dressed with a dry dressing, which may be changed to a hot boric compress if infection occurs, as happened in one of these cases. If everything works smoothly, the transfer can be effected in about fifteen minutes from the time the collection of the blood begins.

The donor in these cases may be the mother, the father, or even some persons not a blood relative of the baby. There is no necessity to group the blood of the donor or recipient, as it has been shown that the hemagglutinins and precipitins are not developed in the child to any great extent until it is about 2 years old. It was found, in this series, that sometimes the blood of one donor was more effective in controlling the hemorrhage than that of another. Blood from the mother frequently seemed to be better than that from the father.

There does not seem to be any danger of overloading the heart in giving the blood in this way, as the flow into the vein is very slow, and in none of the babies was there any evidence of respiratory or circulatory embarrassment. Many of the babies had an elevation of temperature of a few degrees for a few hours, but seemed to be otherwise none the worse for the operation.

RESULTS

In all, there were fourteen cases in this series. The seriousness of the hemorrhage varied from a slight capillary oozing from a mucous membrane to a severe anemia which resulted from extensive bleeding from the cord, or from a melena. In many of the cases, various remedies had been tried before transfusion was undertaken, such as retying and sewing the umbilicus in cord hemorrhages, or the giving of various other

forms of coagulant, such as blood coagulants, horse serum, or human serum under the skin. These measures had failed to produce the desired effect, and so transfusion was resorted to. The operation was followed by recovery in all cases, but in a few it was necessary to repeat the transfusion.

In one case a baby was suffering from a severe icterus neonatorum, and the jaundice persisted for several days after the hemorrhage was controlled. This is suggestible of the possible value of this procedure in severe cases of this kind unaccompanied by actual hemorrhage.

Clinically, striking improvement is shown by these babies after they had received from 75 to 100 c.c. of blood. The color is better, the bleeding usually stops in a few minutes, and the child is very much more active. It can be put to the breast in a short time, and is usually vigorous enough to take its feeding. If it is very weak from blood loss, it is probably better to feed it breast milk from a bottle for some time until it regains some of its strength, and is free from the danger of recurrence of the hemorrhage. If recurrence does occur, it may be necessary to repeat the process. In this case, if one external jugular has been used, it is probably better to use the median basilic vein, if it is not too small.

This, however, is not always necessary, as in one case I transfused a baby that had had a previous transfusion of defibrinated blood into the external jugular. This child started to bleed again on the second day, and I attempted to use the opposite external jugular for a second transfusion. As a result of defective apparatus, the blood clotted while we were getting it into the vein, and we were forced to tie off that vein. We then tried the arm vein, but it was too small, and broke while we were inserting the needle. I therefore reopened the wound I had made in the neck and dissected out the internal jugular vein, passed ligatures in the usual way, injected the blood, and tied off that vein. This left the baby with both external jugular veins and one internal jugular vein tied off; but, as far as could be seen, it did not affect the circulation of the head in the least, and the baby made an uneventful recovery.

One point that might be mentioned that we have learned from these experiments is that in using blood from the mother it is better to allow a slight excess of citrate solution, as it would appear that more is necessary to prevent coagulation in mother's blood than in blood taken from the father. This clinical fact is in line with some results that I have obtained in the study of the coagulation time of the blood in puerperal women.

These hemorrhages occurred from the first to the fourteenth day of life, and are more common about the fourth to the seventh day. In the melena cases there may be no evidence of bleeding for some time, except the pallor and weakness of the baby, until a large, black stool with or without fresh blood reveals the diagnosis.

Bleeding from the cord or from a circumcision is usually detected early, but much valuable time is frequently lost trying ineffectual methods to control it, such as retying the cord, putting in extra stitches, or the use of styptic applications locally. These hemorrhages are chemical in origin, and cannot be controlled by mechanical means. The only sure way of controlling them is by the administration of whole blood, and the best way of accomplishing this is by the intravenous blood transfusion of citrated blood.

It is not known just what happens in the blood of new-born babies that results in the failure of the normal mechanism of coagulation to function. Rodda [3] has shown that there is a decrease in the coagulability, beginning with the second day and reaching its lowest point about the fourth or fifth day. The coagulability returns to normal in most cases about the eighth to the tenth day, and the bleeding time as well as the coagulation time may be prolonged in babies apparently otherwise normal.

It would seem possible or even probable that this phenomenon is intimately related, either as a result of, or as part of, the process of icterus neonatorum. This process occurs, and disappears in about 50 per cent. of cases at the same time as the decrease in the coagulability is manifest, and its cause has never been satisfactorily explained.

It is obvious that something is lacking in the blood of these infants which is essential to normal blood coagulation and which predisposes to these hemorrhages. Whatever this substance or these substances are, they are present in excess in normal adult blood and are not dependent on the calcium content of the donor's blood, for in these experiments the injected blood contained its calcium supposedly in the form of the insoluble calcium citrate. It is more likely, therefore, that some of the other constituents of the blood entering into the coagulation are deficient, such as the thrombokinase or prothrombin, or that some substance in the blood, such as bile, interferes with the normal activity of the coagulation ferments.

CONCLUSIONS

1. Blood transfusion by the citrate method is a specific for the treatment of the hemorrhages of the new-born.
2. Peripheral veins, and especially the external jugular veins, are well adapted for this procedure if the proper instruments and technic are applied.
3. This method is safer than the injection of blood into the longitudinal sinus, and is not too technically difficult for the average physician.
4. The recovery of a patient with severe icterus neonatorum suggests the use of this procedure in this condition.

3. Rodda, F. C. Determining Coagulation Time of Blood in New-Born, Am. J. Dis. Child. **19**: 268 (April) 1920.

Cowpox in 1796.—In the month of May, 1796, the cowpox broke out at Mr. Baker's, a farmer who lives near this place. The disease was communicated by means of a cow which was purchased in an infected state at a neighboring fair, and not one of the farmer's cows, consisting of thirty, which was at that time milked escaped the contagion. The family consisted of a man servant, two dairy maids and a servant boy; who, with the farmer himself, were twice a day employed in milking the cattle. The whole of this family except Sarah Wynne, one of the dairy maids, had gone through the smallpox. The consequence was that the farmer and the servant boy escaped the infection of the cowpox entirely, and the servant man and one of the maids had each of them nothing more than a sore on one of their fingers, which did not produce the least disorder in the system. But the other dairy maid, Sarah Wynne, who never had the smallpox, did not escape in this easy manner. She caught the complaint from the cows and was effected with it in so violent a degree that she was incapable of doing any work for the space of ten days.—Edward Jenner: An Inquiry into the Causes and Effects of the Variolae Vaccinae, a Disease Discovered in Some of the Western Counties of England, particularly Gloucestershire, and Known by the name of the Cowpox (1798).

CHANGES IN THE TEMPORAL BONES IN EXPERIMENTAL RICKETS

THEIR RELATION TO OTOSCLEROSIS *

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In a previous report by one of us,[1] attention was called to the possible relation of otosclerosis to rickets or to the deficiency disease of which rickets is a common manifestation. The purpose of this second report is twofold: (1) to determine the pathologic changes within the temporal bone, particularly in parts most intimately associated with the function of hearing, in experimentally produced conditions having a fundamental resemblance to rickets, and (2) to establish an analogy between these changes and those found in that important and prevalent progressive type of deafness named "otosclerosis," thus attempting to offer experimental evidence as to its cause, i. e., that it is a manifestation of a deficiency disease.

Until 1902, Moos and Steinbrügge, according to Politzer,[2] were the only two who had minutely investigated the changes in the labyrinth of rickets. Necropsy of a dumb idiot, deaf since birth, who had general hyperostosis of the cranium, disclosed these changes: hyperostoses on the inner tympanic wall; great constriction of the internal auditory canal; ossification of the ligamentum annulare, and a mass of tissue consisting of cartilage cells and fibrous plugs, with a small calcareous deposit, in the capsule of the right cochlea near the recessus hemisphericus. In addition, in the left ear the foot-plate of the stapes was replaced by a bony mass which extended into the osseous substance of the labyrinth capsule. In the right ear, instead of the crura of the stapes, slipper shaped bands were seen, which were ossified only at their external periphery, and between which connective tissue rich in cells was deposited. Since that time, few investigators have called attention to changes in the temporal bone in rickets.

Mayer[3] finds bony degeneration in the cartilage about the oval window, together with the same changes of ossification about the "joint" around the oval window. Mayer studied the changes in the temporal bone in a 9 months old child with well advanced rickets:

> The marrow, blood spaces and adjacent layers of bone stained bright red in the hematoxylin-eosin-stained preparation, and in these red parts appeared very broad osteoid formations (bonelike tissue with deficiency of lime salts) which were sharply differentiated from the deep blue underlying bone. The marrow was distinctly fibrous, and evident spindle-shaped cells and collagen fibrils formed a widely reticulated network in which numerous osteoblasts were seen. Another significant finding was the remains of premature cartilage in the region of the oval window, which was not ossified in the typical manner, but absorbed by the ingrowth of giant cells.

Mayer quotes Pommer and Schmorl, who likewise showed that the newly formed bony tissue remains uncalcified and covered with osteoblasts.

Ziegler, according to Mayer, also called attention to the changes in the temporal bone in rickets and to the fibrous nature of the bone marrow, an "endostitis," in which the newly formed network of bone remained uncalcified and in which the defect was lack of calcification rather than in the formation of cells.

Fig. 1.—Labyrinthine capsule: osteoid tissue, bone only partly calcified, and wide cellular canals; slightly reduced from a photomicrograph of 160 diameters' magnification.

INTERNAL EAR IN EXPERIMENTAL RICKETS

The experimental work was carried out on young white rats in the manner now widely used in studying the biologic effects of deficient diets on these animals. Each litter of young was divided, part serving as controls and part being subjected to the experimental diet. For one series of animals, the diet was low only in fat-soluble A; for another series, it was low in both vitamin and calcium. We had for study, therefore, material coming from three groups of rats: (1) the normal controls; (2) rats on a diet deficient only in fat-soluble vitamin, and (3) rats on a diet deficient in both fat-soluble vitamin and calcium. The basal diet was composed of: casein, 18 per cent.; dextrin, 72 per cent.; salt, 4 per cent., and yeast, 6 per cent. This diet, when fat-soluble vitamin was administered in the form of 2 or 3 drops of cod liver oil daily to each control animal, was found to be adequate to bring about normal growth and development. When the fat-soluble A was absent, growth and increase in weight were retarded in the characteristic manner, and xerophthalmia developed. If calcium also was omitted, bone changes became marked.

Technic.—At the end of the experimental period, which had been continued for three months, the rats were killed with chloroform. The long bones were removed and fixed in 10 per cent. dilution of liquor formaldehydi for microscopic study. The heads were removed, the skin, soft parts and lower jaws dissected away, the top of the skull and brain removed, and the rest of the head fixed in the 10 per cent. liquor

* From the Nelson Morris Memorial Institute for Medical Research of the Michael Reese Hospital.

1. Kauffman, A. B.: Deficiency Diseases of the Ear, Nose and Throat, 1, Otosclerosis, 2, Hyperplastic Ethmoiditis, Laryngoscope **32**: 50 (Jan.) 1922.
2. Politzer, A.: Diseases of the Ear, Philadelphia, Lea Bros. & Febiger, 1903.
3. Mayer, O.: Untersuchungen über die Otosklerose, Leipzig, Alfred Hölder, 1917.

formaldehydi. After fixation, the bones were decalcified in 5 per cent. nitric acid in the 10 per cent. liquor formaldehydi, washed in water, dehydrated in alcohol, and embedded in celloidin. The base of each skull was cut into transverse serial sections, each tenth section being stained and mounted. Mayer's acid hemalum and aqueous eosin were used as routine stains.

In the decalcification of the bones, differences in calcium content were already evident in the different series of rats. The bones of those animals which had been maintained on a diet low in both fat-soluble A and calcium were completely decalcified within a very short while, six hours usually being sufficient. The bones from rats which had been maintained on a diet low only in fat-soluble vitamin required longer action of the decalcifying fluid, usually over night, whereas the normal controls required a still more protracted action of the decalcifying agent.

In the microscopic examination the attempt was made to compare similar regions and levels of the auditory apparatus in the three series of rats. In each series the foot-plate of the stapes formed the most convenient landmark for orientation.

Normal Rats.—In the series of normal controls there were no bony abnormalities to describe. The external auditory canals of some of the animals of this series contained dense collections of polymorphonuclear leukocytes, without, however, any evidences of involvement of the middle ear or of the bones surrounding the middle and internal ear. A similar condition was also present with about equal frequency in the animals of the two experimental series.

Rats on Low Vitamin and Low Calcium Diet.—The changes noted in the animals of the series on a diet low in both vitamin and calcium are described first because they were most marked and most widespread. Throughout all the bones of the base of the skull there are present the evidences of disturbed bone formation which have been described so completely for the long bones by others in experimental rickets of rats (Fig. 1). Completely calcified bone is small in amount. The greater portion of the bone is composed of uncalcified osteoid tissue, which has, in general, the normal trabeculated arrangement; but the trabeculae are somewhat thicker than those of the normal bone of the control series. The osteoid tissue has a faintly fibrillated appearance, and its nuclei are larger and richer in fluid than those of the normal bone. Where bone marrow is present, it is hyperplastic, cellular, free of fat, and usually rich in red blood corpuscles; moderate numbers of myeloplaxes are present in the marrow. Cartilage is absent, except about the annular ligament of the foot-plate of the stapes and in the ventral portions of the occipital and sphenoid bones; the cartilage about the annular ligament shows certain changes to be described later. The haversian canals are wide, and are filled with a tissue rich in young, spindle connective tissue cells, which surround a dilated, thin walled, engorged blood vessel in each canal. Osteoclasts are not seen in any of the sections. In one animal of this series, osteoblasts are numerous, forming a distinct layer on the surface of the osteoid trabeculae; in other animals of the series they are present in fewer numbers.

Osseous Changes In and About the Auditory Apparatus: The changes described above as present diffusely in the bones of the base of the skull are as marked in the petrous portion of the temporal bone as elsewhere. The labyrinthine capsule in one animal is readily distinguished from the surrounding bone by its thinner, denser lamellae of osteoid tissue, by the absence of marrow and by the less numerous canals. The capsule contains more calcium than the surrounding bone, but, like the latter, is incompletely calcified. In the other rats of this series the bone immediately about the cochlea and labyrinth (Fig. 1) cannot be distinguished from that farther away, the entire petrous bone being soft and spongy, with numerous wide, cellular, vascularized spaces.

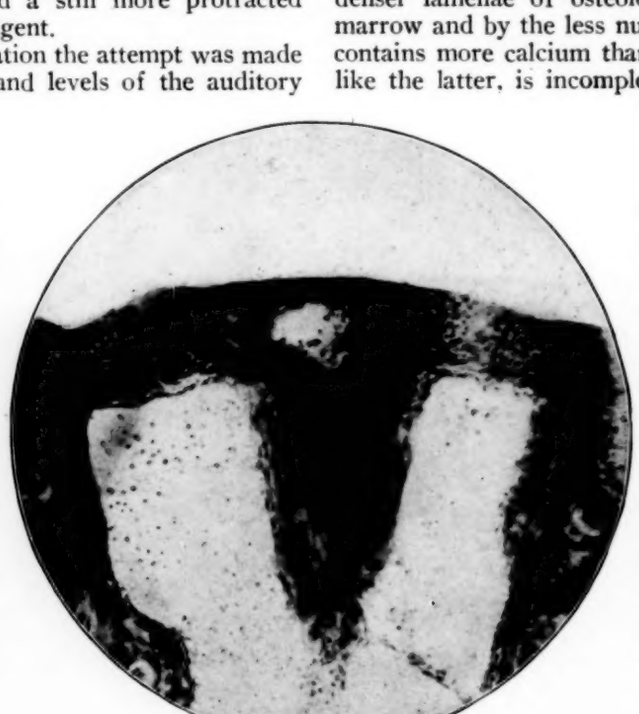

Fig. 2.—Foot-plate of the stapes, with a central cellular area: The annular ligament on the right, which is the anterior margin of the oval window, is indistinct and the line of calcification is irregular; on the left, an area of calcified cartilage extends almost to the annular ligament; slightly reduced from a photomicrograph of 160 diameters' magnification.

The stapes, just above its foot-plate, contains in every specimen a central area of cellular tissue (Fig. 2). The foot-plate has a somewhat greater degree of curvature than in the normal animals. In one the bending is quite marked, the foot-plate bulging into the cisterna perilymphatica vestibuli (Fig. 3). In another animal two slight projections extend into the vestibular cavity from the margins of the foot-plate, the middle portion of the plate being bowed outward into the middle ear cavity (Fig. 4). This condition is suggestive of hyperostosis, but has probably been brought about by the outward bending of the central part of the foot-plate.

The cartilage of the oval window on both sides of the annular ligament is definitely abnormal (Figs. 2 and 4). The cartilaginous zone is increased in width, and its margin next to the bone is irregular. The cartilage cells are less regularly arranged than normal, and those nearest the annular ligament appear younger than the rest of the cells in that the nuclei are larger and less condensed. Capsules enclosing two cells each are more numerous than in the controls. Irregular calcification of the cartilage, especially of the petrous side, is apparent; deeply blue stained projections of cartilaginous matrix may extend almost to the free margin of the annular ligament (Fig. 2). At the anterior margin of the oval window the changes in the cartilage have led to almost complete disappearance of the annular ligament (Figs. 2, 3 and 4). The latter,

instead of being a very sharply defined band of transversely fibrillated tissue between two zones of cartilage, is indistinct, being represented by only a few fibrils, which run from the marginal cartilage to that of the stapedial foot-plate. The free margins of the two cartilaginous zones are very indefinite and irregular, and in places the two zones appear to be fused and to replace the annular ligament completely as the result of proliferation of cartilage cells (Fig. 5). The changes in and about the annular ligament and the foot-plate are present in all the animals of the low calcium series, five in number, which were subjected to detailed microscopic study. In all the animals the changes in the osseous tissue are marked and widespread. It is not possible to detect any greater proneness to involvement on the part of any particular portion of the bony auditory apparatus, but the cartilage of the anterior margin of the oval window is uniformly more severely involved than that of the posterior margin.

Changes in the Auditory Soft Tissues: In the normal animals the labyrinth is lined by a fairly thick layer of tissue which has the structure of neuroglia or neuro-epithelium. This is composed of rather widely separated, faintly outlined cell bodies, each with a small, round, deeply stained nucleus about the size of that of a lymphocyte. These cells lie in a very finely fibrillated ground-substance, the fibrils interlacing with one another in all directions. The layer of lining cellular tissue is traversed by a few widely separated capillaries. In the animals of the low calcium series, the layer of tissue which lines the labyrinth is of normal thickness, but contains a larger number of young spindle nuclei (Fig. 1). The latter are usually most numerous nearest the bony wall or about the walls of the capillaries; the cells to which these nuclei belong appear to have been derived from the small amount of stroma which normally supports the capillaries. The ground-substance of the lining tissue appears more coarsely fibrillated, somewhat denser, and slightly more deeply stained than in the normal animals. The cochlear nerve contains a few small round cells with deeply stained nuclei, apparently lymphocytes. In the spiral ganglion, young spindle nuclei are slightly increased in number in one specimen. In general, it may be said that changes in the auditory nervous tissues are slight; such as are noted appear to be secondary to the nutritional disturbance of the more markedly involved bone or to the abnormal general metabolism.

Fig. 3.—Foot-plate of the stapes, bent inward into the vestibular cavity: The annular ligament at the right (anterior margin of the oval window) is indistinct; slightly reduced from a photomicrograph of 160 diameters' magnification.

Animals on a Diet Low in Fat-Soluble Vitamin Only.—In the animals which were kept on a ration low only in fat-soluble A, osseous changes, both immediately about the auditory apparatus and at a distance from the latter, are much less marked than the changes which have been described above. The bone is composed of dense, hyaline, deeply eosin-stained, fibrillated trabeculae which are usually centrally calcified. The haversian canals contain only small amounts of cellular tissue; the marrow present is moderately cellular. In this series of animals the structure of the bone approaches very closely that of the normal controls. The animals of this series used for microscopic study had been treated with cod liver oil and had recovered from their xerophthalmia and retarded gain in weight. The slighter degree of involvement in this series, as compared with the low calcium series, might be considered evidence of recovery from osseous disturbances under the influence of cod liver oil. We do not believe, however, that the bones were ever so severely or so diffusely involved in the animals which had been on a diet low only in fat-soluble vitamin as in those which had been subjected also to a low calcium ration.

The changes noted in the bones of the base of the skull in the two experimental series of rats can be closely correlated with those present in the long bones. In the animals which had been maintained on a diet low in both calcium and vitamin, the long bones give evidence of disturbed calcification as marked as that present in the bones of the skull. An excessive amount of osteoid tissue is present, calcification is deficient, the line of cartilage between diaphysis and epiphysis is irregular and partly calcified, and the bone marrow is hyperplastic and cellular. In the series whose food was deficient only in fat-soluble vitamin, changes are much less marked, and the long bones approach the normal in structure.

Clinical Application.—It is seen, therefore, that in rats fed on diets low in content of fat-soluble A and calcium, there were produced pathologic conditions in the temporal bone having a fundamental resemblance to the other bony skeletal changes in rickets. These changes, definite and well marked, are present in structures vital for perfect hearing. The bowing of the foot-plate of the stapes (suggestive of the yielding of soft bone to external pressure); the proliferative changes in the region of the anterior margin of the oval window; the involvement of the annular ligament, that may, in the process of healing, go on to at least partial ankylosis; the replacement of the normal, dense, nonvascular bone of the labyrinth capsule and coils of the cochlea by vascular spongy bone; the proliferative changes in the auditory nervous tissues—these alterations are certainly sufficient to warrant the assumption that corresponding changes even less marked in the human being would produce impairment of hearing to a varying degree. It is interesting here to ask whether the change in the position of the head, observed in some of the animals fed on these deficient diets, may not have been due to labyrinthine involvement.

We feel justified, therefore, in calling attention to several points hitherto unrecognized both by pediatricians and workers in the problem of rickets, and also by the otologist: that changes in the temporal bone in rickets are important ones since they are concerned with structures essential to the function of hearing; and, secondly, that with such changes there may be a type of deafness either initiated very early in life or remaining latent until the healing process is complete, that has for its etiologic basis dietary deficiencies. This may help to throw some light on the vast number of impaired hearing cases found in children and not ascribable in their entirety to any of the entities in the present-day classification of deafness.

OTOSCLEROSIS A DEFICIENCY DISEASE

Attention was called by one of us [1] to the possibility that otosclerosis is a deficiency disease, that it is a nutritional disorder having for its most important etiologic factor a vitamin deficiency of fat-soluble A, so that it was termed at that time a latent "adult rickets." There is scarcely any chronic disease which shows more quantitative variations than rickets, changes from a clear-cut disorder going down to a vanishing point which needs the greatest care in order to establish its existence. Further to establish this assumption, we shall make an effort to show that the experimentally produced pathologic changes in the internal ear of rats, following dietary deficiencies, can rightfully be considered precursors of the clinical and pathologic entity known as otosclerosis.

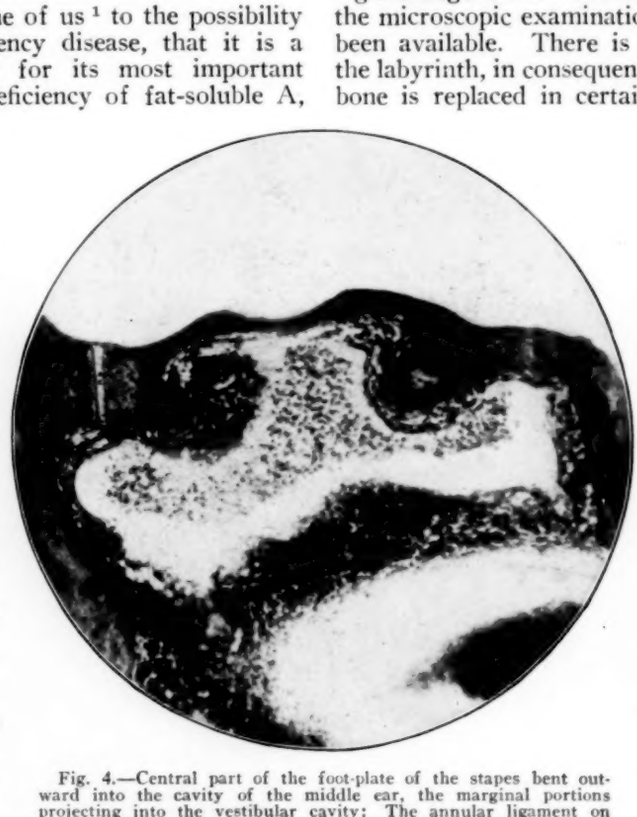

Fig. 4.—Central part of the foot-plate of the stapes bent outward into the cavity of the middle ear, the marginal portions projecting into the vestibular cavity: The annular ligament on the right (anterior margin of the oval window) is indistinct and there is irregularity of calcification; slightly reduced from a photomicrograph of 155 diameters' magnification.

The term "otosclerosis" has been accepted by otologists since the work of Politzer,[2] in 1893, as indicating a definite entity. It has been applied to that group of cases showing a chronic progressive deafness (usually associated with tinnitus aurium) in which, independently of intercurrent disease of the tympanum, the bony capsule surrounding the labyrinth is the seat of a chronic nonsuppurative disease. Although von Tröltsch [4] was the first to suggest, on the basis of clinical observations, that this condition be given a separate place in the category of diseases of the ear, it was Politzer who clearly defined the condition, introduced the term, and demonstrated its character by microscopic study as a primary pathologic change of the capsule of the labyrinth. Many observers attempted to show an analogy between this condition and other pathologic states in which other bones of the body were affected, particularly rickets, osteomalacia and arthritis. Beck,[5] in 1915, first called attention to the fact that in otosclerosis there is evidence of calcium deficiency in the rest of the bones of the body, especially in the larger and long bones, as determined by roentgenograms. Politzer believed that the form of progressive deafness which runs its course from the very beginning without any catarrhal symptoms must be regarded as a special disease of the organ of hearing. Unfortunately, however, to this time we are no nearer to knowledge of its cause than we were when Politzer, Siebenmann, Katz, Habermann and other European otologists first called our attention to the condition, and as a result, there has been offered no form of treatment of benefit to this prevalent malady, which constitutes more than 7 per cent. of all ear cases.[6]

Pathology.—Most authors are agreed as to the pathologic change itself. This knowledge has been gained by the microscopic examination of such specimens as have been available. There is osteoporosis of the bone of the labyrinth, in consequence of which the dense petrous bone is replaced in certain areas by vascular, spongy bone, especially in the region of the anterior bony margin of the oval window. In its early stages, the process is a true new formation of osteoid tissue and not a transformation of old bone. It is characterized by the large size of the osseous spaces and haversian canals; the spaces are filled with connective tissue rich in cells, which surround large and small blood vessels. Osteoclasts are not seen at this stage. Later on, the diseased areas become sclerosed by the deposition of new bone in the walls of the spaces. There is usually a sharp line of demarcation from the uninvolved portions. In the early stages, the nerve structures are normal, as a rule.

All authors have taken it for granted that the change is superinduced on previously normal bone structure, with which hypothesis we are at variance.

It must be recognized, as shown by Kerrison,[7] that several varieties of the disease may exist, varying in mechanical results according to the region involved. In some cases the region about the oval window is the chief seat of abnormality. In others, there may be foci of change in widely separated portions of the petrous bone, in parts of the labyrinthine capsule not closely related to structures essential to cochlear function. In still other cases, the distribution of the pathologic process is such as to involve directly cochlear structures, with functional reactions characteristic of cochlear nerve involvement.

In the experimental rats studied by us there were present changes in the temporal bone that are similar

4. Von Tröltsch, A.: Die Krankheiten des Ohres, Ed. 2, Wurzburg, Stobel, 1862.
5. Beck, J. C.: Roentgenographic Diagnosis in Otosclerosis, Laryngoscope **25**: 154, 1915.
6. Bezold, F. R., and Siebenmann, F. R.: Text Book of Otology, translated by Jacques Holinger, Chicago, E. H. Colegrove, 1908.
7. Kerrison, P. D.: Diseases of the Ear, Philadelphia, J. B. Lippincott Company, 1921.

in most respects to the foregoing findings. We have produced osteoid changes in the capsule of the labyrinth and coils of the cochlea, together with changes involving the stapediovestibular region.

It must be noted that these changes have been produced more or less acutely and extensively, in contradistinction to the more chronic and localized process that takes place in otosclerosis. However, the anatomic changes which accompany the healing of experimental rat rickets have been thoroughly studied by other investigators; and so far as the changes in the temporal bone are in exact accord with the changes in the long bones, we feel justified in assuming that similar healing processes would take place here, and give a picture identical with advanced otosclerosis, an involvement like that produced experimentally being a precursor of the latter condition. It has been shown that the relative proportions of the dietary components (vitamins and inorganic salts) determine whether the animal will develop bones which are normal or pathologic, and in the latter case whether the animals will have rickets, osteoporosis or osteosclerosis.[8]

SUMMARY

In young rats which have been maintained on a diet low in fat-soluble vitamin A and in calcium, there occur abnormalities of the osseous capsule of the internal ear which are identical with those changes in the long bones which are characteristic of experimental rickets.

These alterations, since they occur in structures concerned in the function of hearing, may result in an impairment of hearing.

The analogies between the changes in the temporal bones in experimental rickets and the lesions which have been described in otosclerosis suggest that the latter condition may be a late result of rickets or a manifestation of a dietary deficiency still existent during adult life.

Fig. 5.—Anterior margin of the oval window: The annular ligament is almost completely replaced by cartilage; slightly reduced from a photomicrograph of 275 diameters' magnification.

8. McCollum, E. V., and Others: Studies on Experimental Rickets, XXII, Conditions Which Must Be Fulfilled in Preparing Animals for Testing the Antirachitic Effect of Individual Foodstuffs, Bull. Johns Hopkins Hosp. **33**: 296 (Aug.) 1922.

Reproduction in Tsetse Flies.—Tsetse flies differ from all others of their family in their remarkable manner of reproduction. They do not lay eggs, but the single developing larva is retained within the body, being nourished by special glands on the walls of the uterus. The larva is full grown before it is born, and occupies practically the entire swollen abdomen of the mother. In *Glossina palpalis* the first larva is born three or four weeks after mating, and another is born every nine or ten days, provided the temperature is around 75 or 80 F. In one captive fly, eight larvae were produced in thirteen weeks, and only one egg was found left in the body. Pregnant flies often abort when disturbed, and cases are known in which the larvae pupated within the abdomen of the mother, to the destruction of both of them.—Chandler: Animal Parasites and Human Disease.

NONSURGICAL REMOVAL OF PARAFFIN IN THE URINARY BLADDER

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The literature concerning foreign bodies in the bladder describes a large variety of articles. These have either been introduced from without by the patient or the medical attendant, or have ulcerated their way into the bladder from a neighboring viscus. Among the articles may be mentioned hairpins, straws, quills, gum, broken catheters or filiforms, nails, closed safety-pins, gauze, sponges and bullets. Rarely, nonabsorbable ligature material may erode its way through the bladder wall, following an operation on nearby pelvic organs. The silk, silkworm, or silver wire may then be seen lying free in the bladder or adherent to the mucous membrane, usually still knotted. Luys [1] has illustrated such an occurrence.

Occasionally the urologist is confronted with a case of wax or paraffin in the urinary bladder. The method and the reason for introducing the object are well known. The patient usually fashions a bougie out of wax or paraffin, and then, during the self-imposed urethral manipulations, the object slips inward beyond reach. In the endeavor to recover it, the bougie is sometimes forced back into the bladder, and we then have the clinical condition of foreign body to deal with.

Many ingenious instruments have been devised for removing objects from the bladder. The simple hollow tube known as the Kelly cystoscope is perhaps the easiest to use in the female. These tubes are now made with a distal light on a light carrier, and it is no longer necessary to wear a head-mirror. Alligator forceps are introduced through the tube, grasping and removing the foreign body. Young's rongeur cystoscope, Young's cystoscope lithotrite, the Brown-Buerger operating cystoscope, and the Bigelow lithotrite all are of utmost value in attacking this problem.

The case here submitted is one in which gasoline was injected into the bladder to dissolve a wax crayon which the patient had introduced. This method of removal, while new, is not original, having first been recorded by Caples [2] in 1919.

REPORT OF CASE

History.—E. W., a man, aged 23, was referred, Jan. 16, 1922, by Drs. T. J. Goundry and W. J. Gibson, with the complaint that he had a crayon pencil in the bladder. The past

1. Luys, Georges: Cystoscopy and Urethroscopy, St. Louis, C. V. Mosby Company, 1918, p. 189.
2. Caples, B. H.: Foreign Body in the Urinary Bladder, Surg., Gynec. & Obst. **29**: 315 (Sept.) 1919.

history was negative. He had always been strong and healthy, and had never consulted a physician before. The present illness began four days before his first visit, while the patient was testing out the caliber of his urethra with a commercial colored crayon, such as children use in school. Within the first twenty-four hours he began to pass gross blood and an occasional small clot. The bleeding was terminal, and consisted of about three drops. Frequency became progressively worse, until when seen he was voiding every half hour, accompanied by pain in the glandular portion of the urethra, occasionally referred to the rectum. There was no renal colic, and no pain above the level of the bladder, anteriorly or posteriorly. Nocturnal frequency was the same as during the day, and the patient stated that he did not pass any particles of the crayon.

Examination.—Urine voided into two glasses was opaque from presence of pus and blood. The external genitalia, the contents of the scrotum, the inguinal rings and the rectum were normal. Cysto-urethroscopy, with 4 per cent. solution of procain, was performed. A Brown-Buerger cysto-urethroscope, size 18 French, passed easily and revealed no residual urine. The bladder capacity was 250 c.c. The bladder was washed repeatedly until the solutions became clear. The mucous membrane was injected throughout, red and velvety, but no areas of ulceration were seen. In the bas-fond of the bladder, posterior to the interureteric ridge, were two pieces of red crayon lying crossed like the letter X (Fig. 1). The patient stated that two days before, during the act of voiding, he felt a sudden snap in the bladder, and thought that the crayon had broken. Both ureteral orifices were normal in appearance. They were not catheterized. The vesical outlet and the posterior urethra were inflamed to about the same degree as the bladder.

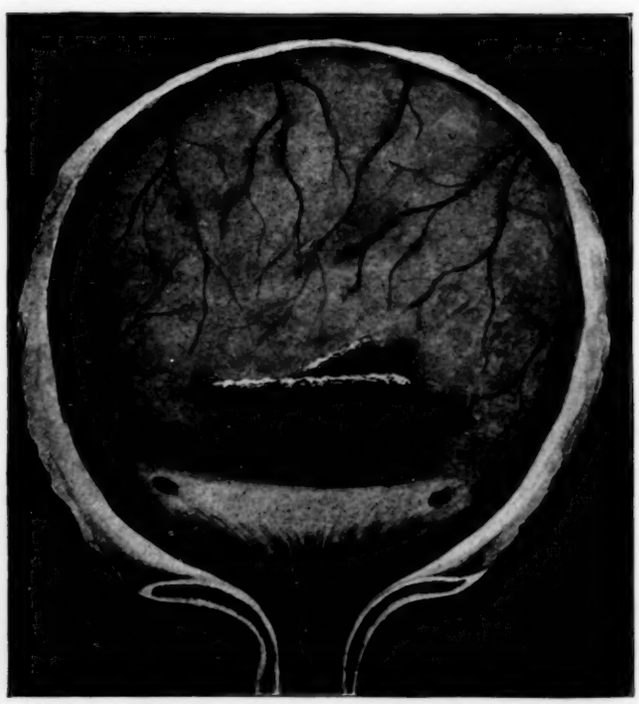

Fig. 1.—Semidiagrammatic view of the two pieces of crayon lying in the bladder, as seen through the cystoscope.

Treatment and Course.—The next day, which was the fifth day of the disease, 1 ounce (30 c.c.) of filtered gasoline, 70 proof, and 2 ounces (60 c.c.) of light liquid petrolatum were heated to a temperature of 105 F. and injected into the bladder through a Nélaton catheter. The patient retained this for one hour and forty-five minutes without much discomfort. He then voided 5 ounces (300 c.c.). The gasoline and oil floated to the top of the container, and many red particles of the crayon settled to the bottom. Six hours later the injection was repeated, and was retained for two hours without discomfort. The patient was up and about, coming to the office for his treatments. On the second day of treatment, the voided urine contained many crumbs and fragments of the crayon. During the act of micturition, while seen in my office, the stream became suddenly interrupted, and the patient could not void. The next moment he passed the large curved fragment seen in Figure 2, and at subsequent voiding the urine changed from red (particles of crayon in suspension) to straw color. Pain in the bladder and urethra was much less. The patient felt fine, and wanted to go back to work. No further injections of gasoline were given. The patient was put on hexamethylenamin and told to return in a week. One week after the urine had ceased to contain particles of crayon, the bladder was clear of any foreign material. There was still a moderate amount of cystitis. The third cystoscopy, about two months later, revealed the bladder absolutely normal.

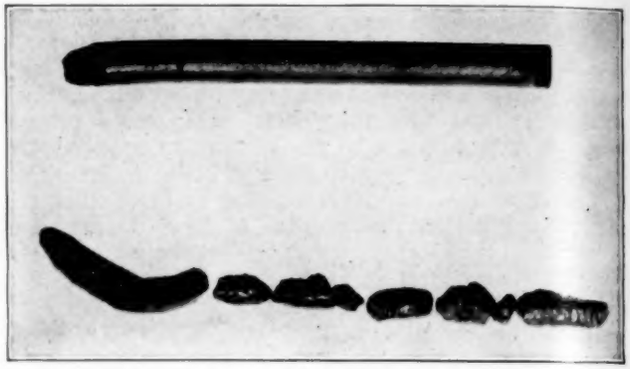

Fig. 2.—Above, crayon similar to the one used by patient; below, some of the larger pieces of the crayon which were voided, about three-fourths the actual size.

COMMENT

If I had not chanced across Caples' article, this patient would probably have been submitted to a suprapubic cystotomy. I saw a similar case during my hospital internship. A young man had fashioned a bougie out of a piece of paraffin candle and passed it on himself. When seen in the bladder through the cystoscope, the paraffin was in a rounded mass and floated. This patient was subjected to suprapubic cystotomy, as Caples' method was then unknown.

It is surprising how well the bladder tolerates the mixture of gasoline and liquid petrolatum, even in the presence of more or less acute cystitis, which is usually the case. This patient retained his first injection for one and three-quarters hours, and some of the others as high as five hours. He had a total of six injections of gasoline and liquid petrolatum.

Experiments as to the solubility of various brands of wax or paraffin, colored crayons and Christmas candles brought out the fact that most of them will dissolve in the one-third gasoline, two-thirds liquid petrolatum mixture, in about two hours at body temperature. If the container is agitated by shaking, they dissolve sooner.

Some of the colored crayons do not dissolve at all, but the cohesive substance which holds together the particles dissolves and the crayon crumbles. The crayon in this case was 3½ inches long, and had a caliber of 24 French when the paper wrapper was removed. If we are dealing with the type of crayon that goes into complete solution, the paraffin can be recovered by chilling the urine. This causes the paraffin to be precipitated out in its solid state, and the paraffin can then be collected and the total from the different voidings measured.

This case is reported so as to call attention to the fact that it is not necessary to perform a suprapubic cystotomy or perineal section to remove wax or paraffin from the bladder. The crayon could have been removed with Young's cystoscopic rongeur, but this would have necessitated the withdrawal and the reintroduction of the cystoscope many times, biting off a small piece each time, on account of the object's friability. Since the rongeur is size 30 French, this is far from a pleasant procedure for the patient. To the general practitioner, when there is a history of wax or paraffin in the bladder, it is not even necessary to submit the patient to instrumentation, it being such a simple matter to inject a little gasoline and liquid petrolatum.

SUMMARY

A patient who had passed a colored crayon into the bladder was given six injections of gasoline and liquid petrolatum, which dissolved the crayon.

35 Chestnut Street.

A STUDY OF LIGHT WAVES IN THEIR RELATION TO RICKETS*

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AND
MILDRED WEINSTOCK
NEW YORK

Recent investigation has established the fact that white rats can be regularly protected against rickets by means of sunlight or artificial rays produced by the mercury vapor quartz or the carbon arc lamp.[1] All these sources of light emit not only visible radiation, but also ultraviolet rays of various wave lengths. In a previous paper, Hess, Unger and Pappenheimer drew attention to the fact that rats which were confined in an enclosure of ordinary window glass (3 mm. thick) failed to be protected by sunlight, as by this procedure the effective rays were filtered out of the spectrum. In a subsequent paper,[2] it was shown that a filter of ordinary window glass (Corning), which transmitted ultraviolet waves as short as 334 millimicrons, intercepted the effective rays from the mercury vapor lamp, indicating that not all ultraviolet rays possess this property, but that it is associated only with waves shorter than 334 millimicrons. The proposition was advanced that the longest waves of value in relation to rickets lie in the neighborhood of 300 millimicrons. Recently, Pacini,[3] in a consideration of this subject, has expressed the same opinion. Shipley[4] believes that very short ultraviolet rays, those about 210 millimicrons in length, probably have the greatest antirachitic effect.

In the present study we have attempted a closer analysis of the spectrum in order to ascertain more precisely which waves exert this remarkable protective action. A partial abstract of this work will be found elsewhere.[5] The method of procedure has been to interpose selected filters between the source of light and the experimental animals, and to note whether irradiation prevented the development of rickets. The rats were 4 weeks old at the outset, and were fed the Sherman and Pappenheimer low phosphorus diet. For the most part the source of light was the mercury vapor, air cooled lamp, run at 76 volts. In order to obtain a desired dosage, the lamp was placed at varying distances, and used for varying periods of time, as may be noted in the accompanying tables. The filters

TABLE 1.—FILTRATION OF RAYS (MERCURY VAPOR QUARTZ LAMP)

Rat No.	Weights, Gm.	Filter	Exposure: Time, Min.	Exposure: Distance, In.	Lower Limit of Spectra of Filters, Millimicrons	Rickets: Roentgenogram	Rickets: Microscopic Examination
949	38-40	G 38 H	10	12	475	Moderate	Marked
950	40-40	4.6 mm.				Moderate	Marked
951	38-40					Moderate	Marked
1063	50-64	G 38 H	30	9	475	Moderate	Moderate
1064	40-52	4.6 mm.				Moderate	Moderate
1065	40-40					Moderate	Slight
1066	44-50					Moderate	Moderate
1204	50-50	G 38 H	60	9	475	Moderate	Moderate
1205	40-50	4.6 mm.				Moderate	Moderate
1206	50-44					Moderate	Slight
1207	40-44					Moderate	Slight
1302	70-100	Window glass	15	36	334	Marked	Marked
1303	50-80	2.6 mm.				Marked	Marked
1304	58-60					Marked	Marked
1305	54-60					Marked	Marked
1493	50-58	Window glass	30	9	334	Marked	Marked
1494	32-44	2.6 mm.				Marked	Marked (slight calcification)
1488	42-50	Window glass	60	9	334	Marked	Marked
1489	40-44	2.6 mm.				Moderate	Marked
1490	38-40					Moderate	Marked
1491	38-50					Marked	Marked
952	30-34	G 586 A	10	12	302	Moderate	Extreme
953	40-40	4.3 mm.				Moderate	Marked
954	20-28					Moderate	Extreme
1067	40-40	G 586 A	30	9	302	Very slight	Minimal
1068	40-52	4.3 mm.				Slight	Minimal
1069	40-42					Slight	Minimal
1070	42-42					Neg. (?)	Almost neg.
1200	50-50	G 586 A	60	9	302	Neg. (?)	Negative
1201	54-40	4.3 mm.				Neg. (?)	Slight
1202	50-50					Neg. (?)	Negative
1208	50-40					Neg. (?)	Negative
1512	44-50	Pyrex	3	18	289 (280?)	Slight	Slight
1513	44-50	0.8 mm.				Negative	Slight
1514	40-44					Slight (?)	Slight
1515	40-48					Slight (?)	Slight
1516	40-48	Pyrex	6	18	289 (280?)	Negative	No R. (osteoporosis)
1517	30-36	0.8 mm.				Negative	Very slight R.
1518	40-50					Negative	No R. (osteoporosis)
1519	46-50					Negative	No R.
1330	54-54	Pyrex	15	18	289 (280?)	Negative	No R.
1331	40-40	0.8 mm.				Negative	No R.
1332	54-44					Negative	No R.
1333	40-40					Negative	No R.
1334	54-60	G 86 B	15	18	302	Marked	Marked
1335	48-60	4.2 mm.				Marked	Marked
1336	40-50					Marked	Marked
1337	50-56					Marked	Marked
1500	30-30	G 86 B	30	9	302	Moderate	Marked
1501	32-30	4.2 mm.				Moderate	Marked
1502	30-34					Moderate	Marked
1503	30-36					Moderate	Marked
1496	30-34	G 86 B	60	9	302	Moderate	Marked (sl. calcification)
1497	32-34	4.2 mm.				Marked	Marked
1498	30-30					R (?)	Marked
1499	30-30					Moderate	Marked

* From the Department of Pathology of the Columbia University College of Physicians and Surgeons.

1. Hess, A. F.; Unger, L. J., and Pappenheimer, A. M.: Proc. Soc. Exper. Biol. & Med. **19**: 8, 1921-1922. Shipley, P. G.; Park, E. A.; Powers, G. F.; McCollum, E. V., and Simmonds, Nina: Ibid. **19**: 43, 1921-1922. Powers, G. F.; Park, E. A.; Shipley, P. G.; McCollum, S. V., and Simmonds, Nina: Ibid. **19**: 120, 1921-1922. Hess, A. F.; Unger, L. J., and Pappenheimer, A. M.: Ibid. **19**: 238, 1922.

2. Hess, A. F.: The Influence of Light in the Prevention and Cure of Rickets, Lancet **2**: 367 (Aug. 19) 1922.

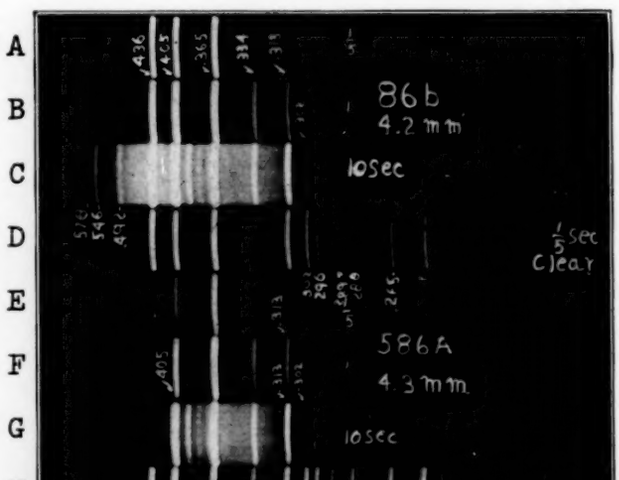
3. Pacini, A. J.: M. Herald & Electrotherapist, October, 1922.

4. Shipley, P. G.: Faulty Diet and Its Relation to the Structure of Bone, J. A. M. A. **79**: 1563 (Nov. 4) 1922.

5. Hess, A. F.; Pappenheimer, A. M., and Weinstock, Mildred: Proc. Soc. Exper. Biol. & Med. **20**: 14, 1922.

were of glass, manufactured by the Corning Glass Works, and were of known transmissibility. In every instance the transmission curves of these glasses have been studied by the U. S. Bureau of Standards, and are set forth in their scientific and technologic papers.[6] In regard to the animals, the same procedure was followed as in previous experiments of this series. White rats weighing about 40 gm. were employed; after a twenty-one day period on the experimental diet, they were roentgenographed, and after a total twenty-eight day period they were killed and examined. The interpretation of rickets was based on a microscopic examination of the costochondral junctions.

Table 1 illustrates the results obtained when the source of light was the mercury vapor lamp, and various glass filters were interposed. When rays are employed without filtration, we have found that irradiation for two minutes at a distance of 3 feet suffices to protect white rats under the foregoing experimental conditions. When, however, the diet was amplified by replacing 5 per cent. of the wheat flour with an equal percentage of dried milk, a marked increase in growth was brought about, and greater irradiation was found necessary in order to protect. The first experiment (Table 1) demonstrated a failure to afford protection when filter G 38 H (Noviol C) was employed. This is a yellow filter, which cuts off rays shorter than 475 millimicrons. This failure resulted even when exposures were carried out at a distance of only 9 inches and for a period of sixty minutes. If we regard an exposure of two minutes at 3 feet as a "unit protective dose," then the irradiation in this instance was equivalent to 480 protective units. The next section of this table gives data in relation to a filter of crown window glass which allowed the passage of ultraviolet waves as short as 334 millimicrons. Here, again, 480 units of light were ineffective.



Comparative spectrograms of mercury vapor radiations through the neutral filter 86 B (4.2 mm.) and the purple filter 586 A (4.3 mm.): *A, B, C,* one-fifth, one and ten seconds exposures through 86 B; *D, H,* one-fifth and one second exposure without interposition of any filter; *E, F, G,* one-fifth, one and ten seconds exposures through 586 A.

Filter G 586 A, which was employed in the subsequent tests, is a purple glass, and transmits waves as short as 302 millimicrons. It should be borne in mind that the spectrum of the mercury vapor quartz light is not continuous like that of sunlight, or a band spectrum similar to that of the carbon arc light, but is a discontinuous spectrum composed of a number of bright lines of varying intensity. One of the important lines is composed of waves 313 millimicrons and another 302 millimicrons in length. The accompanying spectrogram, which was made with the filter used in this experiment, shows that this glass allows the passage of a considerable amount of 313 millimicron rays and a feeble intensity of 302 millimicron wave lengths. To ascertain the percentage of transmission for glasses of different thicknesses, we have made use of the chart employed by the U. S. Bureau of Standards for this purpose.[7] When this chart is used, it is found that this filter transmits about 3 per cent. of 313 millimicron waves, and less than 1 per cent. of the 302 millimicron waves. It will be noted (Table 1) that protection failed with ten minutes' irradiation, that it was partial with irradiation of thirty minutes, and almost complete when continued for sixty minutes. It is evident that we may conclude that whereas rays 334 millimicrons in length are ineffective, waves 302 millimicrons in length are able to protect rats from rickets. The data, however, are not adequate; the analysis of the spectrum is not sufficiently precise to warrant a conclusion as to whether the bright line 313 millimicrons contributed to the protection. From the fact, however, that prolonged irradiation was successful, whereas short irradiation proved unsuccessful, it would seem that the most effective wave lengths were those of 302 millimicrons, and that they were supplied in insufficient intensity unless prolonged exposures were employed.

The test with pyrex glass (0.8 mm. thick) gave a result that was to be expected. This filter was markedly permeable to short ultraviolet rays, allowing the passage not only of waves of 302 millimicrons, but also those of 289 and even 280 millimicrons. It is not surprising, therefore, that this filter did not greatly interfere with the protective action of the mercury vapor rays. The fact that several "protective units" were required to bring about the desired result must be ascribed largely to the diminution in intensity as well as to the filtration of wave lengths of curative value.

The last filter used in this series was G 86 B, which is nearly neutral in color. As may be seen from the accompanying spectrogram, the ultraviolet rays transmitted by this filter are strikingly similar to those transmitted by the purple filter (G 586 A), which we have just discussed. This combined spectrogram was made from exposures of the identical filters employed in our tests; the spectra were photographed simultaneously on the same plate. Both transmit 313 millimicron waves in considerable intensity, and 302 millimicron waves in less than 1 per cent.; in the latter region the transmissibility rather favors the G 86 B filter. In spite of this marked similarity, it was found, as will be seen in the table, that the colorless filter (G 86 B) failed to protect under conditions in which the purple filter (G 586 A) was successful.

There is, however, a striking difference in the transmission of these two filters in the field of visible rays. This is evident from a glance at the spectrograms, which show that with the neutral filter (G 86 B) the rays extend much farther to the left in the region of

6. Scientific Paper 325, Technologic Papers 119 and 148, Bureau of Standards, 1918, 1919 and 1920.

7. Burge, W. E.: Am. J. Physiol. **36**: 35, 1914-1915.

the visible than when the purple filter (G 586 A) was used. These spectrograms fail to illustrate this aspect of the question, as they do not register rays longer than about 450 millimicrons, whereas the visible part of the spectrum includes rays 720 millimicrons in length. It was found on examining these two filters by means of

TABLE 2.—CARBON ARC IRRADIATION; CLOTHING MATERIALS

Rat No.	Weights, Gm.	Material	Exposure: Time, Min.	Exposure: Distance, Feet	Rickets: Roentgenogram	Rickets: Microscopic Examination
1545	42-48	Thin cotton (nainsook)	10	3	Negative	None
1546	40-42				Negative	None
1547	40-50				Negative	None
1548	60-60				Negative	None
1549	40-46	Cotton stocking	10	3	Negative (?)	Slight
1550	28-28				Moderate	Moderate
1551	60-64				Rickets	Moderate
1552	28-26				Rickets	Marked
1659	70-66	Cotton stocking	30	3	Slight	Very slight
1660	60-54				Negative	No definite
1661	58-60				Negative	No definite
1662	66-60				Slight	No definite
1553	40-54	Woolen stocking	10	3	Rickets	Moderate
1554	60-60				Negative (?)	Very slight
1555	50-60				Moderate	Moderate
1556	70-68				Moderate	Moderate
1655	80-70	Woolen stocking	30	3	Slight	No definite
1656	50-40				Negative	Slight
1657	76-70				—	Very slight
1658	44-40				—	Slight

a spectrophotometer that the nearly neutral glass, which failed to allow protection, transmits about 90 per cent. of red rays of 680 millimicron wave length, and about 87 per cent. of yellow rays of 540 millimicron wave length, whereas the purple filter (G 586 A) transmits only 3 per cent. of red, and none of the yellow rays. Furthermore, the neutral filter allows the passage of infra-red waves which are entirely excluded by the purple filter. In view of this marked distinction in transmissibility, it seems probable that the difference in the action of these filters rests in their difference in permeabillity to long rays—that either the infra-red or visible rays, or both, exert a neutralizing or inhibitory effect on the radiations which protect against rickets. As experiments are under way to test this hypothesis further, we shall postpone a detailed consideration of this interesting aspect of the subject.

A series of experiments was undertaken to test the transmissibility of some clothing materials which are commonly worn by young infants. This seemed worth while in order to gain a conception of the degree to which clothing filters out the protective rays of the sun. As this was the object of the test, the carbon arc lamp, the rays of which more nearly resemble sunlight, was used instead of the mercury vapor lamp. White flame carbons were inserted, and the lamp was placed at a distance of 3 feet; under these conditions, irradiation of about three minutes with 30 amperes suffices to protect white rats. Filters of thin white cotton dress material, and of white cotton stocking, and of wool stocking material were interposed as filters between the animals and the carbon arc lamp. They were placed at a distance of 6 inches from the rats. It was found that the thin cotton material offered but little hindrance to the protective rays. When ten "protective units" of carbon light were given, these rays were able to traverse not only the cotton but even the woolen stocking material. All these materials were white, or almost white. Another test was devised to ascertain the difference in transmissibility of white and of black material. To this end cotton goods, counting ninety-six by 120 threads to the square inch, and manufactured on the same loom—differing, therefore, merely in color—were employed as filters in the same way as in the previous experiment. Exposures were made of ten and twenty minutes' duration, using the respective materials. As Table 3 shows, the black cotton material (which was dyed with an anilin dye) acted as a more potent filter than the white material. This is in keeping with the accepted opinion that black possesses marked absorptive affinity for ultraviolet rays.

COMMENT

It follows from our experiments that, in order to be of value in rickets, ultraviolet waves must have a wave length not longer than 302 or possibly 313 millimicrons. This renders light that has passed through ordinary window glass of no therapeutic value in this disorder. The shortest waves of sunlight that reach the surface of the earth are about 290 millimicrons, and vary greatly in intensity according to the time of the day and the season of the year. Indeed, when the atmosphere is heavy with moisture, smoke or dust, the shortest of these waves are absorbed. It is evident, therefore, that the range of effective radiations is markedly circumscribed by nature, and further limited by meteorologic conditions. The foregoing experiments serve to emphasize the remarkable specificity of wave lengths of light in relation to rickets. It can be stated with confidence that waves 324 millimicrons in length have little or no value in protecting against rickets, and that waves of 302 millimicrons are of great value in this respect. This signifies that a difference of about thirty millionths of a millimeter in wave length suffices to render ultraviolet light effective or ineffective.

In this connection, attention may be called to some experiments of Burge [7] on the coagulating property of

TABLE 3.—CARBON ARC IRRADIATION—WHITE AND BLACK MATERIAL

Rat No.	Weights, Gm.	Material	Exposure: Time, Min.	Exposure: Distance, Feet	Rickets: Roentgenogram	Rickets: Microscopic Examination
1390	50-50	White	10	3	Rickets	Marked
1391	44-50				Slight	Moderate
1392	40-50				Slight	Slight
1393	50-50				Slight	Moderate
1618	44-42	White	20	3	Slight	Slight
1619	44-38				Slight	None
1620	50-48				Negative	
1621	50-42				Negative	None
1394	50-52	Black	10	3	Marked	Marked
1395	46-50				Marked	Very marked
1396	54-58				Marked	Very marked
1397	50-52				Marked	Very marked
1622	48-50	Black	20	3	Rickets	Moderate
1623	54-40				Slight	Slight
1624	48-50				Marked	Marked
1625	46-50				Marked	Moderate

light, in which he found that the longest waves able to coagulate egg white were 302 millimicrons in length. The similarity of this result to that described above may be found to have some significance. Looking at the question from the other end of the spectrum, we have been unable to ascertain how short ultraviolet rays may be and still possess prophylactic value in rickets. It

has not been possible to filter out the radiations in the near ultraviolet region (from 400 to 300 millimicrons) and at the same time allow the passage of radiations in the far ultraviolet. It should be borne in mind that the shorter the light waves in this region the more irritating they are, so that it is probable that there is a therapeutic limit also in this direction.

The experiments with clothing material indicate that the rays do not have to impinge directly on the surface of the skin. Clothing must be regarded as other filters which screen the effective rays, namely, according to their texture or thickness. Furthermore, a direct quantitative relationship exists between the nature of the material and the duration of exposure to sun's rays or artificial sources of light. Black clothing will absorb more of the effective ultraviolet rays than similar white material.

The spectrum would seem to contain not only rays which can prevent or cure rickets, but also longer rays which are able to neutralize or inhibit the effect of these beneficent radiations. This phenomenon points to the need and the value of an analysis of rays employed in heliotherapy in rickets, tuberculosis, and other diseases. It would seem to indicate that this valuable therapeutic agent will be used with the employment of filters to absorb radiations which may be not only ineffective but counteracting.

Clinical Notes, Suggestions, and New Instruments

EXTERNAL CRICODYNIA: ITS CONTROL THROUGH THE NASAL (SPHENOPALATINE OR MECKEL'S) GANGLION

GREENFIELD SLUDER, M.D., ST. LOUIS

CASE 1.—For twenty years I have occasionally treated a man, now 55 years old, for acute inflammatory attacks in the lower pharynx, larynx and upper windpipe. His history is otherwise negative, save that he is underweight and not as strong as most men. In each of probably a dozen attacks he complained of a painful spot at the cricoid cartilage, in the external neck, with tenderness to slight pressure. I construed this to be a slight external perichondritis. It has always disappeared with recovery from the inflammatory attack.

CASE 2.—Two years ago I had a case identical with the foregoing in a man then 40 years of age. Eight years ago he had a tuberculous disease of the lumbar spine which confined him to bed in a plaster-of-Paris jacket for six months, since which he has been strong and well. His history is otherwise negative. For twenty-five years I have treated him for an occasional acute inflammatory attack of the nose, throat, larynx and windpipe, each lasting about a week and ending in recovery. With the attack two years ago he developed a painful external cricoid. The inflammatory attack was well in a week or ten days, but the cricoid remained very tender and painful for six months. I again thought of perichondritis, but could never discover any thickening of the tissues at the cricoid. Aside from the pain at the cricoid, no diagnosis could be made. For this reason I have elected to term it external cricodynia. Everything that I could do for him was in vain. He complained constantly, bitterly of the pain, particularly when touched, as, for example, by his collar.

CASE 3.—In the past year I have had another case identical in every way with Case 2. The patient is a strong, normal man, 33 years old. He had a chronic tonsillitis for which I did tonsillectomy. His sense of general well-being is improved by it, but the painful cricoid was unchanged. Remembering some of the surprising and inexplicable results[1] obtained by anesthetizing the nasal (sphenopalatine-Meckel's) ganglion, I resorted to this experiment, and to my delight it stopped the cricodynia for two weeks. A second cocainization was again successful, and until now (six months later) it has not returned. There was nothing in the case to suggest its being a nasal ganglion case.

One month ago the second patient returned complaining of the external cricodynia. Anesthetizing the nasal ganglion stopped it, and it has not as yet returned.

I have had one more case of cricodynia which I controlled through the nasal ganglion, in a patient whom I saw only twice, in my office.

At present I am unable to speculate as to the path of the impulse or the mode of accomplishment for this result.

3542 Washington Avenue.

AN INSTRUMENT (DRILL) TO FACILITATE THE CORRECTION OF CERTAIN TYPES OF EXTERNAL DEFORMITIES OF THE NOSE

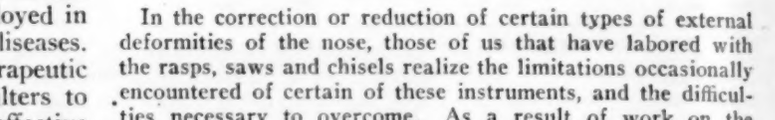
SIDNEY ISRAEL, M.D., HOUSTON, TEXAS

In the correction or reduction of certain types of external deformities of the nose, those of us that have labored with the rasps, saws and chisels realize the limitations occasionally encountered of certain of these instruments, and the difficulties necessary to overcome. As a result of work on the cadaver, as well as on the living patient, a drill or burr has been devised, by the use of which I have succeeded in meeting and correcting these difficulties.

The drill is especially indicated in the correction of lateral displacement, or deformity of the bony nasal framework, when it is necessary to mobilize the nose completely previous to replacement in the corrected position. Its use in this type of deformity renders the need for saws or chisels unnecessary.

In the reduction of bony prominences, exostoses, or the like it is invaluable, and with it one can smooth, round or bevel the bone, as would best suit the individual case.

The drill or burr will attach to any small motor, by means of a flexible cable, and from the illustration one can see that the cutting or drill head is carefully protected by means of the steel hooded guard, which is a continuation of the main shaft, at the distal end and covers two thirds of its entire circumference. When the instrument is introduced beneath the skin, only the part of the drill in actual contact with the bone is exposed. The adjacent structure, together with the structures beyond and the overlying skin, is carefully protected by the guard surrounding the rotating drill or burr-head.



Drill for correction of certain types of external deformities of the nose.

Carter Building.

A RAPID TECHNIC FOR PREPARING HISTOLOGIC SECTIONS BY THE PARAFFIN METHOD

V. D. KEISER, A.B., M.D., AKRON, OHIO

The paraffin method of preparing tissues for histologic study has been, as a rule, the method of choice of most histologists. But in the clinical laboratory, where the element of time is important, the pathologist has often discarded the

1. Dean, L. W.: The Control of Glossodynia Through the Nasal (Sphenopalatine or Meckel's) Ganglion, South. M. J. **15**: 856 (Oct.) 1922. Ewing, A. E.: Pain of Acute Glaucoma Relieved by Cocaine Applied to Meckel's Ganglion, Am. J. Ophth., December, 1908. Miller, H. E.: Intra-Ocular Tension in Glaucoma Lowered by Injection of the Sphenopalatine Ganglion, Index of Otolaryngology **3**, No. 4. Sluder, Greenfield: Headaches and Eye Disorders of Nasal Origin, St. Louis, C. V. Mosby Company, 1918. The Control of Earache Through the Nasal (Sphenopalatine, Meckel's) Ganglion, J. A. M. A. **78**: 1708 (June 3) 1922; The Control of Mandibular Pain Through the Nasal (Sphenopalatine, Meckel's) Ganglion, Tr. Am. Laryngol. A., 1922.

paraffin method for other methods that are more rapid. The modification here described preserves the advantages of the paraffin methods as to quality of sections, and the like, and yet lends itself well to the needs of the clinical pathologist.

This method depends primarily on a hastening of the dehydration process by using hot acetone as the dehydrating agent. This is accomplished in this laboratory by placing the fixed tissue in a specimen bottle of thick glass of about 30 c.c. capacity. The bottle is tightly corked and the cork clamped in place after the addition of about 25 c.c. of acetone. The bottle so prepared is then put in the paraffin oven, which is kept at 60 C. After two hours the dehydration process is completed with most tissues, as evidenced by the absence of a turbidity on the addition of xylene. As acetone is about as inflammable as alcohol, the pressure flask should not be opened near a flame.

DETAILS OF THE METHOD

1. Blocks of tissue are cut as thin as practicable, and boiled for one minute in a 10 per cent. dilution of liquor formaldehydi.
2. While still hot, the tissue is dried with blotting paper.
3. The tissue is placed in a specimen bottle; about 25 c.c. of acetone is added, and a cork is clamped in place. The bottle is placed in the paraffin oven at 60 C.
4. After two hours it is removed from the paraffin oven and uncorked. Care must be taken at this point to remove the cork slowly, preferably with the whole container enveloped in a towel. A very considerable pressure has been created within the container, and, on removal of the clamp, the cork may fly out and the acetone expand with explosive violence.
5. If the tissue contains a considerable amount of fat, as in omentum or breast, it is treated with 15 or 20 c.c. of ether for fifteen or twenty minutes. (This suggestion of my colleague Dr. T. H. Boughton, of Akron City Hospital, has proved of value in sectioning fatty tissue.)
6. It is treated with 10 or 15 c.c. of xylene. The absence of turbidity is noted. Should turbidity appear, another hour in fresh acetone in the paraffin oven will complete the dehydration process. From fifteen to twenty minutes in xylene is ample time.
7. It is placed in high melting point paraffin in the paraffin oven for two hours.
8. It is blocked out and cooled in ice and salt solution. Cooling in an ice and salt solution seems, in our hands, to prevent troublesome crystallization of paraffin.
9. It is cut in sections at 5 microns, and spread on water at 38 C.
10. It is transferred by means of a plain glass slide to the surface of ice water.
11. It is mounted on a slide smeared with Mayer's albumin fixative.
12. The slide is placed in the paraffin oven for fifteen or twenty minutes.
13. Staining with hematoxylin and eosin is done at once.
14. It is mounted in balsam.

COMMENT

Since we have been taking sections up from a cold solution rather than from the warm solution on which they have been spread, we have experienced no appreciable trouble in having sections float off the slides during the staining process.

The method has resulted in materially shortening the time in which this laboratory can render a pathologic report after receipt of the pathologic material.

Proper Training in Physiotherapy.—It seems to be quite clear that granted that we get a group of men and women interested enough in physiotherapy they will see that they get the proper amount of information. It is essential that they get their training under the best possible auspices. There is responsibility upon the medical profession to provide such training for those who want it and are prepared to receive it.—R. L. Wilbur, *California State J. Med.* **21**:25 (Jan.) 1923.

Special Articles

TYPHOID IN THE LARGE CITIES OF THE UNITED STATES IN 1922

ELEVENTH ANNUAL REPORT

THE JOURNAL presents its eleventh annual survey [1] of typhoid fever mortality in the cities of the United States having more than 100,000 population. The statistics of the fourteenth census showed that there were in 1920 sixty-nine cities with a population of more than 100,000. These may be conveniently considered for our purpose in six groups. More than one fourth of the population of the United States lives in these cities, and nearly one sixth lives in the twelve cities with more than 500,000 population.[2]

TABLE 1.—CLASSIFICATION OF CITIES

	Population	Number of Cities
Group 1.	More than 500,000	12
Group 2.	From 300,000 to 500,000	9
Group 3.	From 200,000 to 300,000	12
Group 4.	From 150,000 to 200,000	10
Group 5.	From 125,000 to 150,000	9
Group 6.	From 100,000 to 125,000	17

As has been the case since 1920, every one of the twelve largest cities (Group 1, more than 500,000 population) had a typhoid death rate under 10, and, as in 1920 also, all but one had a rate under 5. In 1921 we were obliged to note that seven of these twelve cities showed a slight typhoid increase, as compared with the remarkably low figures for 1920. The year just past, however, has witnessed a resumption of the decline in typhoid death rate, all but three of these cities showing a lower rate for 1922 than for the low year of 1920. The increases are, for the most part, trivial and to be expected on the basis of ordinary yearly fluctuations.

TABLE 2.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 1 (MORE THAN 500,000 POPULATION)

	Deaths from Typhoid per 100,000 Population				
	1922	1921	Average 1916-1920	Average 1911-1915	Average 1906-1910
Chicago	1.0	1.1	2.4	8.2	15.8
Boston	1.4	3.1	2.5	8.0	16.0
Cleveland	2.2	3.4	4.0	10.0	15.7
New York	2.2	2.1	3.2	8.0	13.5
San Francisco	2.2	4.2	4.6	13.6	27.3
Philadelphia	2.7	2.3	4.9	11.2	41.7
Buffalo	3.5	4.2	8.1	15.4	22.8
Los Angeles	3.7	2.6	3.6	10.7	19.0
Baltimore	4.0	5.4	11.8	23.7	35.1
St. Louis	4.2	3.8	6.5	12.1	14.7
Pittsburgh	4.6	4.1	7.7	15.9	65.0
Detroit	5.0	5.8	8.1	15.4	22.8

1. The preceding articles were published May 31, 1913, p. 1702; May 9, 1914, p. 1473; April 17, 1915, p. 1322; April 22, 1916, p. 1305; March 17, 1917, p. 845; March 16, 1918, p. 777; April 5, 1919, p. 997; March 6, 1920, p. 672; March 26, 1921, p. 860, and March 25, 1922, p. 890.

2. The number of typhoid deaths has been sent us by the local officer of health, and the rates have been calculated in most cases on the basis of the midyear 1922 population estimates made by the U. S. Census Bureau. In a few instances indicated in the text, other estimates have been employed. It may perhaps be noted that the figures kindly furnished us by the municipal officials include all typhoid deaths that have occurred within the city limits, nonresidents as well as residents. In some instances this undoubtedly gives an exaggerated impression of the amount of typhoid fever in a community, but at present statisticians are agreed that "the attempt to eliminate the deaths of nonresidents would often result in an understatement of the true mortality" (Bureau of the Census, Mortality Statistics, 1912, p. 13). No attempt has been made to revise the averages of preceding years, since in most cases the figures would be changed but slightly.

Six of these large cities had a rate under 3. The Baltimore rate is so low (4.0) as to be worthy of particular notice, especially considering the fact that, so

TABLE 3.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 2 (FROM 300,000 TO 500,000 POPULATION)

	Deaths from Typhoid per 100,000 Population				
	1922	1921	Average 1916-1920	Average 1911-1915	Average 1906-1910
Minneapolis	1.9	1.2	5.0	10.6	32.1
Milwaukee	2.5	1.9	6.5	13.6	27.0
Newark	2.7	2.8	3.3	6.8	14.6
Seattle	2.8	2.2	2.9	5.7	25.2
Cincinnati	2.9	3.4	3.4	7.8	30.1
Kansas City, Mo.	4.9	11.0	10.6	16.2	35.6
Washington, D. C.	5.2	6.6	9.5	17.2	36.7
Indianapolis	5.4	7.3	10.3	20.5	30.4
New Orleans	10.2	9.3	17.5	20.9	35.6

late as the five year period from 1916 to 1920, the average typhoid rate in that city was 11.8.

The most complete typhoid records continue to be published by the New York City Health Department in its *Weekly Bulletin*. For the quarter ending Sept. 30, 1922, for example, it is stated that the probable mode of infection was traced in 42 per cent. of the cases, which is almost exactly the same as that for the corresponding quarter of the previous year. Out of town infection again stands highest in the list, the proportion remaining very constant, about 26 per cent. of all cases. Bathing in polluted waters in New York City is credited with causing twenty-four cases, and contaminated shellfish with six cases. A number of cases of typhoid were traced to a Thanksgiving party in November, where ice cream was served. Several

TABLE 4.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 3 (FROM 200,000 TO 300,000 POPULATION)

	Deaths from Typhoid per 100,000 Population				
	1922	1921	Average 1916-1920	Average 1911-1915	Average 1906-1910
Providence	0.0	2.5	3.8	8.7	21.5
Columbus, Ohio	1.1	4.0	7.1	15.8	40.0
Jersey City	1.6	3.5	4.5	7.2	12.6
Akron	1.9	5.7	....	....	....
St. Paul	2.0	7.1	3.1	9.2	12.8
Rochester	2.5	3.2	2.9	9.6	12.8
Oakland	3.0	1.3	3.8	8.7	21.5
Portland, Ore.	3.3	3.0	4.5	10.8	23.2
Toledo	3.8	8.6	10.6	31.4	37.5
Denver	5.9	4.5	5.8	12.0	37.5
Louisville	8.0	5.5	9.7	19.7	52.7
Atlanta	10.9	11.0	14.2	31.4	58.4

outside cases were also traced to ice cream from the same source. It was suspected, but not proved, that the wife of the proprietor of the ice cream store was a typhoid carrier. This outbreak illustrates what has been frequently observed in the carrier transmission of disease; namely, that the carrier condition first comes to light in connection with group outbreaks. If some meal or article of food partaken of by a large number of persons furnishes the clue, then the existence of a carrier may be detected, while otherwise the occurrence of scattered cases at long intervals may make an almost impossible epidemiologic tangle. Such outbreaks strengthen the opinion that untraced, and with the available information untraceable, cases of typhoid may be due in relatively large proportion to carrier infection. New York City is apparently practically free from water-borne and milk-borne infection.

Philadelphia is another city in which careful records of typhoid in recent years are available. While the data for 1922 have not yet been published, those for 1921 are interesting for comparison. The source of infection was traced in 58 per cent. of the Philadelphia typhoid cases. Nearly one half of this number (43 per cent.) were attributed to out of town infection. Other sources named are: direct contact with other cases (twenty-two cases); bathing in polluted water (nineteen cases), and drinking polluted water from wells or springs (sixteen cases). No statement regarding carrier outbreaks is made for 1921, but it is is fair to suppose that the proportion does not vary very much from that occurring in New York, since the other sources of infection seem very similar. The heavy toll paid by Philadelphia citizens for maintaining a polluted water supply for nearly fifty years may be seen by comparison of the rates in this city since 1860. In the first decade (1860-1870) the typhoid death rates ranged from about 60 to nearly 100, sometimes exceeding the latter figure. Between 1870 and 1880 the actual rate

TABLE 5.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 4 (FROM 150,000 TO 250,000 POPULATION)

	Deaths from Typhoid per 100,000 Population				
	1922	1921	Average 1916-1920	Average 1911-1915	Average 1906-1910
Syracuse	1.6	3.9	7.7	12.3	15.6
Worcester	3.1	3.2	3.5	5.0	11.8
Dayton	3.7	5.2	9.3	14.8	22.5
Omaha	4.4	4.0	5.7	14.9	40.7
Richmond	4.4	5.6	9.7	15.7	34.0
San Antonio	5.6	16.6	23.3	29.5	....
Dallas	5.8	12.7	17.2	....	....
New Haven	5.8	4.7	6.8	18.2	30.8
Memphis	8.9	9.0	27.7	42.5	35.3
Birmingham	12.5	17.0	31.5	....	....

was somewhat lower, but in 1876, the year of the Centennial Exposition, the rate again reached nearly 100. Little improvement was noted between 1880 and 1890, but in the next decade the rate fell in several years almost to 30. The period 1900 to 1910 was again a time of great typhoid prevalence, the rate exceeding 70 on two occasions. In 1912, filtration for the whole city was completed; pasteurization of the milk supply has been general since 1914, with the eminently satisfactory results shown in the table (only 4.9 for 1916-1920).

We have received an admirable report on typhoid fever in Baltimore. An unusually large proportion (65 per cent.) of the cases in 1922 were attributed with a high degree of probability to their source. About 35 per cent. of the whole number of cases were regarded as due to out of town infection. About 6 per cent. were regarded as due to household contact infec-

TABLE 6.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 5 (FROM 125,000 TO 150,000 POPULATION)

	Deaths from Typhoid per 100,000 Population				
	1922	1921	Average 1916-1920	Average 1911-1915	Average 1906-1910
Bridgeport, Conn.	0.6	2.7	4.8	5.0	10.3
Grand Rapids	0.6	2.8	9.1	25.5	29.7
Scranton, Pa.	1.4	6.5	3.8	9.3	31.5
Springfield, Mass.	1.4	4.4	4.4	17.6	....
Des Moines	1.5	1.4	....	....	....
Paterson, N. J.	2.1	5.8	4.1	9.1	19.3
Hartford, Conn.	2.8	7.2	6.0	15.9	19.0
Youngstown, Ohio	6.2	15.0	....	....	....
Houston, Texas	7.3	11.7	....	....	....

tion, and about the same number to carrier infection. Well water infection was considered to have caused nearly 7.5 per cent. of the cases. It is, of course, true that Baltimore has a high percentage of cases coming to

the city hospitals from rural communities in the neighborhood, and that, in a large proportion of these cases, infection was almost certainly contracted outside the city. The remarkable decline in urban typhoid everywhere naturally brings it about that outside infection is coming to bear a more and more important relation to the total number of city cases. Many other American cities are in much the same position as Baltimore as regards typhoid deaths of nonresidents in the city hospitals. New Orleans, for example, has probably an even higher proportion of nonresident deaths. An exact comparison between city death rates thus becomes a difficult task, unless in all cases nonresident deaths in city hospitals are deducted from the total. Since reliable information on this point is not in all cases available, this is a recognized source of error. It is nevertheless true that the existence of typhoid fever in territory surrounding the large cities of this country should be a matter of concern for city officials. In some instances the prevalence of typhoid in the neighborhood of the city is now receiving attention, since it is apparent that such foci not only swell unduly the number of imported typhoid patients in city hospitals, but also serve as genuine centers of infection for the city population through contamination of milk and other foods destined for city consumption.

There is not much to be gained this year by comment on comparative records of individual cities. The 1922 rates are in nearly every case so low that comparison with the preceding year, or in most cases with one another, can have but little statistical significance. When a city like St. Paul, with a population of nearly 250,000, can report only seven deaths from typhoid, three of which were in nonresidents, it is plain that typhoid is at a low ebb.

The extent of the decrease in typhoid that has occurred in the large American cities is shown especially in Tables 8 and 9. Three cities, New Bedford, Providence and Yonkers, were able to report no deaths from typhoid for the calendar year 1922. The roll of honor this year, including all cities with a typhoid rate under 2.0, is larger than ever before reported. No fewer than eighteen cities find this year a place on the roll of honor, almost double the largest number previously recorded (ten in 1920). For the first time, too,

TABLE 7.—DEATH RATES FROM TYPHOID IN CITIES OF GROUP 6 (FROM 100,000 TO 125,000 POPULATION)

	Deaths from Typhoid per 100,000 Population				
	1922	1921	Average 1916-1920	Average 1911-1915	Average 1906-1910
New Bedford	0.0	2.3	6.0	15.0	16.1
Yonkers	0.0	2.9	4.8	5.0	10.3
Cambridge	0.9	10.8	2.5	4.0	9.8
Albany	1.7	4.3	8.0	18.6	17.4
Lowell	2.6	5.2	5.2	10.2	13.9
Salt Lake City	3.2	5.7	9.3	13.2	....
Fall River	3.3	2.4	8.5	13.4	13.5
Tacoma	4.0	3.0	2.9	10.4	19.0
Wilmington, Del.	5.1	4.4	....	....	....
Camden	5.7	6.6	4.9	4.5	....
Spokane	5.7	4.7	4.9	17.1	50.3
Norfolk, Va.	6.4	4.1	....	....	....
Kansas City, Kan.	7.0	4.8	9.4	....	....
Fort Worth	7.8	10.7	....	....	....
Reading, Pa.	9.2	11.7	10.0	31.9	42.0
Trenton	15.9	8.9	8.6	22.3	....
Nashville	16.2	20.4	20.7	40.2	61.2

TABLE 8.—DEATH RATES FROM TYPHOID IN 1922

Honor Roll (from 0.0 to 2.0)			
New Bedford	0.0	Scranton	1.4
Providence	0.0	Springfield	1.4
Yonkers	0.0	Des Moines	1.5
Bridgeport	0.6	Jersey City	1.6
Grand Rapids	0.6	Syracuse	1.6
Cambridge	0.9	Albany	1.7
Chicago	1.0	Akron	1.9
Columbus	1.1	Minneapolis	1.9
Boston	1.4	St. Paul	2.0
First Rank (from 2.0 to 5.0)			
Paterson	2.1	Fall River	3.3
Cleveland	2.2	Portland	3.3
New York	2.2	Buffalo	3.5
San Francisco	2.2	Dayton	3.7
Milwaukee	2.5	Los Angeles	3.7
Rochester	2.5	Toledo	3.8
Lowell	2.6	Baltimore	4.0
Newark	2.7	Tacoma	4.0
Philadelphia	2.7	St. Louis	4.2
Hartford	2.8	Omaha	4.4
Seattle	2.8	Richmond	4.4
Cincinnati	2.9	Pittsburgh	4.6
Oakland	3.0	Kansas City, Mo.	4.9
Worcester	3.1	Detroit	5.0
Salt Lake City	3.2		
Second Rank (from 5.0 to 10.0)			
Wilmington, Del.	5.1	Youngstown	6.2
Washington, D. C.	5.2	Norfolk	6.4
Indianapolis	5.4	Kansas City, Kan.	7.0
San Antonio	5.6	Houston	7.3
Camden	5.7	Fort Worth	7.8
Spokane	5.7	Louisville	8.0
Dallas	5.8	Memphis	8.9
New Haven	5.8	Reading	9.2
Denver	5.9		
Third Rank (from 10 to 20)			
New Orleans	10.2	Trenton	15.9
Atlanta	10.9	Nashville	16.2
Birmingham	12.5		

TABLE 9.—AVERAGE DEATHS FROM TYPHOID PER HUNDRED THOUSAND IN EACH GROUP, 1916, 1917, 1918, 1919, 1920, 1921 AND 1922

Group	Year	No. of Cities	Total Population	No. of Typhoid Deaths	Average Deaths per 100,000
1	1916	9	13,743,746	854	6.2
1	1917	9	14,027,263	774	5.5
1	1918	9	13,809,901	598	4.3
1	1919	9	15,019,516	463	3.1
1	1920	12	16,526,740	460	2.8
1	1921	12	16,851,750	460	2.7
1	1922	12	17,037,727	441	2.5
2	1916	10	4,063,281	344	8.5
2	1917	10	4,150,099	329	7.9
2	1918	10	4,372,088	296	6.8
2	1919	10	4,511,181	204	4.5
2	1920	9	3,463,760	141	4.1
2	1921	9	3,498,783	174	4.9
2	1922	9	3,540,356	152	4.2
3	1916	10	2,635,983	248	9.4
3	1917	10	2,701,029	173	6.4
3	1918	10	2,773,716	193	6.9
3	1919	10	2,839,092	134	4.7
3	1920	12	2,951,373	142	4.8
3	1921	12	2,990,971	148	4.8
3	1922	12	3,047,937	112	3.6
4	1916	14	2,250,991	330	14.7
4	1917	14	2,310,372	307	13.3
4	1918	14	2,449,736	331	13.5
4	1919	14	3,564,860	210	8.2
4	1920	10	1,707,624	135	7.9
4	1921	10	1,740,300	143	8.2
4	1922	10	1,789,285	101	5.6
5	1916	17	1,983,918	235	11.8
5	1917	17	2,031,313	229	11.3
5	1918	17	2,063,215	240	11.7
5	1919	17	2,103,710	115	5.5
5	1920	7	962,436	46	4.8
5	1921	9	1,123,181	70	6.2
5	1922	9	1,263,044	35	2.7
6	1920	15	1,718,166	83	4.8
6	1921	17	1,948,414	132	6.7
6	1922	17	1,966,279	112	5.6
Total	1916	60	25,667,919	2,011	8.1
Total	1917	60	25,220,076	1,812	7.2
Total	1918	60	25,458,656	1,660	6.5
Total	1919	60	27,028,359	1,126	4.2
Total	1920	65	27,330,099	1,007	3.7
Total	1921	69	28,291,435	1,138	4.0
Total	1922	69	28,644,628	953	3.3

since these summaries were undertaken, there is no city in the fourth rank with a rate over 20. There are, indeed, only five cities with a rate over 10, as compared with nineteen cities of the third rank as late as 1917.

Southern cities have shared in this typhoid decrease along with the cities in the Northern states. Baltimore and Richmond have rates of 4.0 and 4.4, respectively. San Antonio and Dallas report much lower rates for 1922 than for 1920 and 1921. Nashville, which has the highest rate of any city, is in a region in which typhoid is apparently particularly prevalent, the state of Tennessee being debited by the U. S. Census Bureau with the highest typhoid rate in 1921 of any registration state. It is difficult, with typhoid-infested surroundings, for any community to keep reasonably free from typhoid infection. A great improvement has been effected in Nashville in spite of these disadvantages. The average rate was over 40 from 1911-1915, so that 16.2 in 1922 appears relatively low. It may be confidently anticipated that still further improvement will be effected in this city.

Trenton reports the highest typhoid rate for any Northern city, and finds itself in the third rank, having for its only companions four Southern cities with a large negro population, and surrounded by rural areas

TABLE 10.—TOTAL AVERAGE TYPHOID DEATH RATE (1910-1921)

	Total Population (57 Cities)* Estimated by the U. S. Census Bureau Methods	Typhoid Deaths	Typhoid Death Rate per 100,000
1910	20,996,035	4,114	19.59
1911	21,545,014	3,391	15.74
1912	22,093,993	2,775	12.56
1913	22,642,972	2,892	12.77
1914	23,191,951	2,408	10.38
1915	23,740,930	2,068	8.71
1916	24,205,359	1,842	7.61
1917	24,740,068	1,647	6.65
1918	24,971,278	1,557	6.23
1919	25,526,186	987	3.87
1920	26,154,013	921	3.52
1921	26,561,469	978	3.68
1922	26,936,843	851	3.15

* Twelve cities are omitted from this summary because data for the full period are not available.

in which typhoid is far more prevalent than in the neighborhood of Trenton. Trenton and Reading might perhaps profit by an antityphoid campaign. Is there any reason why these cities should have consistently higher typhoid rates than Paterson and Scranton? A few cities seem to have suffered in 1922 from small special outbreaks. Kansas City, Mo., although its total rate is not high, had some milk-borne typhoid, and Washington, D. C., experienced an outbreak attributed to food eaten at a church supper which caused the illness of forty-four persons, and the death of one.

As appears in Tables 8 and 10, the year 1922 marks the lowest point yet reached in the typhoid record of the large cities of the United States. The slight check that occurred in 1921 to the almost steady decline of twelve years has been followed, as we predicted last year, by a further decrease. Compared with 1921, forty-six cities showed a diminished and only twenty-three an increased typhoid rate. It does not seem oversanguine, knowing what we do of modes of typhoid dissemination, to believe that city typhoid rates will decline still further. We are certainly not manufacturing typhoid carriers in the United States as abundantly as we were fifteen years ago.

THE CARE AND FEEDING OF INFANTS

(Continued from page 627)

[NOTE.—This is the tenth of a series of articles on the care and feeding of infants. It is addressed to the general practitioner rather than to the pediatric specialist. When completed, the series, somewhat elaborated, will be reprinted in book form.—ED.]

SUMMARY OF QUANTITATIVE AND CALORIC RELATIONSHIP OF THE FOOD CONSTITUENTS

In the diet recommended as a *minimum* for the average normal infant on a diet of cow's milk with added carbohydrates, namely; per pound, milk 1½ ounces, sugar 1/10 ounce and starch 1/60 ounce, or per kilogram, milk 100 c.c., sugar 6.6 gm. and starch 1.1 gm., the distribution of ingredients would be as in Table 11.

TABLE 11.—INGREDIENTS IN MINIMAL DIET

	Proportion of Amounts: Per Pound Grams	Per Kilogram Grams	Per Cent.	Distribution of Calories: Per Pound	Per Kilogram	Per Cent.
Fat	1.8	4.0	20.5	16.74	37.2	37
Protein	1.5	3.5	17	6.15	14.35	14
Sugar.. in milk	2.0	4.5	62.5	22.55	49.61	49
Sugar.. added	3.0	6.6				
Starch	0.5	1.1				
Calcium oxid.	0.08	0.176				
			Total.	45.44	101.16	

The ratio of the amounts of the components of the diet, when expressed in percentages, shows: fat, 20.5; protein, 17; carbohydrate, 62.5; that of the caloric distribution of the ingredients is: fat, 37; protein, 13.5; carbohydrate, 49.5.

The *amount* of fat in the diet, therefore, slightly exceeds the protein, while the carbohydrate is somewhat more than three times the fat or protein.

The *caloric value* of the diet, however, shows that the fats are about two and one-half times the protein, while the combined fat and protein calories about equal the carbohydrates.

Holt,[40] in studying the diets of a series of 106 children, ranging in ages from 1 to 18 years, found that the average percentage distribution of the food intake in calories was: fat, 35; protein, 15; carbohydrate, 50.

TABLE 12.—CALORIES IN FAT, PROTEIN AND CARBOHYDRATES

Fat	1 gram = 9.3 calories
Protein	1 gram = 4.1 calories
Carbohydrate	1 gram = 4.1 calories

The combined calories of food elements usually recommended for the normal infant average 45 for each pound, or 100 calories for each kilogram body weight. Clinical experience leads me to recommend this amount as the *minimum required* by the average artificially fed infant of the second month (see caloric needs). The greater needs of the individual infant for growth are to be met by increasing the total food given or such of the ingredients as may be indicated. Only under exceptional circumstances should the suggested proportions be deviated from to any considerable amount, and then only through the reparation stage if normal development is to be expected.

NUMBER OF FEEDINGS IN TWENTY-FOUR HOURS

Four-Hour Intervals.—It has been proved that the usual cow's milk mixtures fed to infants do not leave

40. Holt, L. E.: Food, Health and Growth, New York, the MacMillan Company, 1922.

the stomach completely for at least three hours after ingestion. Most normal infants will be satisfied when placed on suitable mixtures at four-hour intervals. For several years, normal infants have been fed successfully on four-hour periods. The most suitable hours are 6 and 10 a. m., and 2, 6 and 10 p. m., with a 2 a. m. feeding if necessary. Most infants will be satisfied with five feedings daily from birth.

Three-Hour Intervals.—If the three-hour interval is indicated, one should begin with seven feedings in twenty-four hours for the first month (6, 9, 12, 3, 6, 10, 2); six feedings during the second and third months (6, 9, 12, 3, 6, 10), and five feedings by the fourth to the fifth month (6, 10, 2, 6, 10), according to the individual need.

Premature and delicate infants having a tendency to vomit, as such cases are exceptions, may be fed smaller amounts more frequently, even at two-hour intervals, if indicated. In case catheter feeding is necessary, the longer interval will usually suffice.

Water to Be Added.—It is most important to remember that young infants require a minimum of one fifth of their body weight of fluids daily (3 ounces per pound), and in their later months at least one sixth of their body weight (2½ ounces per pound) daily.

For the average normal infant, the *amount of water to be added* to the mixture is calculated by estimating that young infants, after their first few weeks of life, should be given 3 ounces of fluid daily per pound (200 c.c. per kilogram) of body weight, and older infants 2½ ounces. The difference between the total fluids required by the infant for a day's feeding, and the amount of milk fed, equals the amount of water to be added. The food mixture is divided into equal portions, the number of which will vary with the feeding interval. Infants having a tendency to vomit usually have to be limited to 2½ ounces of fluid per pound of body weight.

Underweight infants will require a total of fluids approximately 3 ounces, or at times even more per pound of body weight. Very fat infants will often be satisfied with somewhat less water than suggested.

After the fourth month, the average infant will take at least one quart of the food mixture daily. By this time a mixed diet may be instituted by adding a well cooked cereal to one or two of the day's feedings.

After the sixth month, four meals of 8 ounces each of a milk mixture may be given, and a fifth meal of a vegetable broth may be added. *Mixed feeding will be discussed more fully under Additional Foods.*

It has been found that a concentrated milk mixture does not disturb the infant's digestion when the milk is boiled, when cereal waters are used as diluents, or when it is alkalized by the addition of sodium citrate or lime water.

Carbohydrates to Be Added.—Having the necessary amount of milk and water, we ascertain the amount of carbohydrates to be added. Cane or milk sugar will satisfy the needs of the average normal infant during its first month when added in amounts of one-tenth ounce (3 gm.) per pound. Somewhat more than twice this quantity (6.6 gm.) should be added per kilogram of body weight to the day's mixture. Cane sugar mixtures are occasionally refused by infants when large amounts are added because they are too sweet. In such cases, part of the sugar can be replaced by milk sugar or maltose-dextrin compounds.

After the infant is 1 or 2 months old, from one-sixtieth to one-thirtieth ounce (0.5 to 1 gm.) of cereal or cereal flour for each pound of body weight may be added to the mixture. This is best given as cereal water. The addition of the second carbohydrate often has a very beneficial effect on the weight curve.

In underweight infants, the amount of sugar to begin with should be calculated on the basis of the existent weight, approximating the quantity needed for a full-weight infant as rapidly as the sugar tolerance permits.

Table 13 gives equivalents of 1 ounce by weight and the domestic measures of carbohydrates used in the artificial feeding of infants.

TABLE 13.—EQUIVALENTS OF AN OUNCE

	By Weight		By Measure	Spoonfuls, Leveled with Knife		
	Ounce	Gm.	Ounces	Table	Dessert	Tea
Cane sugar	1	30	1.00	2	3	6
Milk sugar	1	30	1.50	3	4.5	9
Maltose-dextrin	1	30	1.50	3	4.5	9
Flour (wheat)	1	30	2.25	5	7.5	15
Flour (barley)	1	30	1.50	3	4.5	9
Barley (pearl)	1	30	2.50	5	8	15
Oats (rolled)	1	30	2.50	5	8	15

1 tablespoonful = 1.5 dessertspoonfuls = 3 teaspoonfuls

To Break the Curd to Assist Digestion of Cow's Milk.—Many infants can digest raw cow's milk. When it is not well digested, the formation of large protein curds is obviated by boiling the milk from two to three minutes over the flame or, better, by putting it in a double boiler and heating it until the water in the outer vessel boils eight minutes. Although the curd is less finely divided by the use of the double boiler as compared with boiling over the direct flame, it answers the purpose for most infants and causes fewer changes in the milk. A small double boiler should be used, as in it the column of milk is deep and has a small surface. The milk should simmer rather than boil actively, and in the larger vessel boiling takes place more readily. Milk that has been simmered undergoes less change in taste than that which has been actively boiled and there is less loss of soluble protein, fat, sugar and salts.

The feeding of raw diluted cow's milk has certain unquestionable advantages; however, when its source is in any way doubtful or its subsequent handling is likely to have led to contamination, it should be either pasteurized or boiled.

Cereal water diluents cause the formation of fragile curds. Addition of sodium citrate to the milk mixtures also prevents the formation of hard protein curds. Sodium citrate may be prescribed either in 5-grain tablets, approximately one-half to 1 grain being added for each ounce of the milk mixture, or a prescription may be so written that each teaspoonful of the prescribed formula will contain sufficient sodium citrate for the day's food.

When lime water is added to cow's milk until it is neutral or faintly alkaline to phenolphthalein, a basic calcium casein is formed which is not acted on by rennet and will not form a curd, even in the presence of lime salts (Van Slyke). Lime water is commonly used in amounts equaling 5 per cent. of the milk in the mixture (1 ounce to 20 ounces of milk). In most instances no advantage is gained by adding alkalis to boiled milk mixtures. Occasionally the addition of sodium citrate or lime water to boiled milk will be found of advantage in cases of difficult feeding and in the presence of vomiting.

(To be continued)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MARCH 10, 1923

THE STATUS OF EPIDEMIC ENCEPHALITIS AS AN INDEPENDENT DISEASE

From the spring of 1920 until recently, there have been comparatively few new cases of epidemic (lethargic) encephalitis in North America, and interest in it has been kept up mainly by the surprising array of its somatic and psychic sequels. Within the last few weeks, however, reports have come of a large epidemic in Winnipeg, and smaller ones in Connecticut and elsewhere. Since 1917, nearly 2,000 articles on this disease have appeared, and, within the last two years, four comprehensive reviews in book form.[1] In addition, the French investigator Levaditi has written a book giving a comparative epidemiologic, pathologic and clinical study of the three closely related acute infectious disorders of the nervous system: encephalitis, poliomyelitis and herpes.[2]

The etiology of both acute encephalitis and poliomyelitis remains unsettled. The champions of the "globoid bodies" of Loewe, Hirschfield and Strauss, and those of the streptococcus, have not yet agreed among themselves, or succeeded in convincing the majority of investigators to accept any exclusive view. It is agreed that the disease is caused by a microbe having a minute filtrable form that permits transmission by means of the filtrable virus to animals. It seems proved also that the virus exists in the nasopharynx, that the disease is mildly contagious, and that the usual period of incubation is ten days. No one now regards seriously the view of the English epidemiologist Crookshank that epidemic encephalitis and poliomyelitis are caused by the same virus or variations of the same virus. The relationship between influenza and encephalitis is most difficult to define. It does not seem reasonable that the appearance of the two diseases in epidemic form at the same time now and in the past can be a mere coincidence. There must be some connection, but what is it? Encephalitis is certainly not a mere sequel of influenza, as most victims of the former do not give a history of having had the latter. Nor do encephalitis patients present the leukopenia and tendency to a peculiar form of pneumonia so characteristic of influenza. Furthermore, there is a form of encephalitis directly connected with influenza, which differs from the epidemic form in being more sudden and severe in its onset, and in having more severe and permanent focal symptoms, more signs of a complicating meningitis, and a marked tendency to multiple minute hemorrhages in the brain and sometimes to suppuration. Economo has suggested that the encephalitis virus requires activation by that of influenza, and it has also been thought that the damage to vessel walls caused by previous influenza renders a person more susceptible to encephalitis. Another theory, which at least cannot be said to have been positively disproved, is to the effect that encephalitis is caused by a highly neurotropic influenza virus. Stern offers the broad hypothesis that encephalitis is caused by a filtrable virus, which exists in a harmless form in the saliva of many persons, and may be activated not only by the influenza virus, but also by pneumococci, streptococci and other bacteria.

While, as yet, we have no proof of a specific causative virus, the nosologic independence of epidemic encephalitis appears proved when, following Stern, we assemble the main features: First, the clinical ones: (1) the prominence of somnolence, transient cranial nerve palsies, and atonic or hypertonic extrapyramidal motor disturbances (choreic and parkinsonian types); (2) the rarity of certain symptoms that are frequent in other forms of encephalitis, such as those indicative of destructive upper motor neuron lesions, as well as convulsions and anesthesias; (3) the relative frequency of "central" pains, sympathetic disturbances, especially salivation, and certain pseudospontaneous motions and disorders of respiratory rhythm, otherwise more commonly seen in psychogenic disorders than in organic disease; (4) the tendency to frequent variation in the grouping of symptoms in different epidemics and localities; (5) the presence of a chronic progressive form. To these we may add (6) the possibility of the development, after a free interval of years, of a progressive "para-encephalitic disease," analogous to the late nervous manifestations of syphilis. This usually is of a parkinsonian type, and may follow in the wake of an acute illness so mild that its nature becomes established only by the character of the subsequent symptoms.[3]

Anatomically, we have these principal features: (1) the insignificance of the gross changes; (2) the rarity of thrombosis and necrosis; (3) the lymphocytic character of the perivascular infiltrations; (4) the predilection of the inflammation for certain regions of the basal ganglions and brain stem.

1. Acute Epidemic Encephalitis: An Investigation by the Association for Research in Nervous and Mental Disease, New York, 1921. Encephalitis Lethargica, Reports on Public Health and Medical Subjects, No. 11, London 1922. Achard, Charles: L'encéphalite léthargique, Paris, 1921. Stern, Felix: Die epidemische Encephalitis, Berlin, 1922.

2. Levaditi, C.: Ectodermoses neurotropes: poliomyélite, encéphalite, herpès, Paris, 1922.

3. This aspect of the encephalitis problem was discussed by Bassoe, Peter: The Diagnosis of Epidemic Encephalitis, J. A. M. A. 79: 2221 (Dec. 30) 1922.

Much work has been done on the spinal fluid, and the views, at first quite divergent, have become crystallized. There is no pathognomonic feature, but there are two fluid "syndromes," thus defined by Eskuchen:[4] (1) lymphocytosis; globulin increase; luetic gold curve; increased sugar; (2) cell-globulin "dissociation," with relative increase in cells; luetic gold curve; increased sugar.

On the whole, the most valuable work in the last two years relates to the sequels, mental and physical, the number and variety of groupings of which are most surprising and bewildering, bringing new and unexpected problems in differential diagnosis. Postencephalitic states are easily confused not only with paralysis agitans and chronic choreas, but also with dementia praecox, general paresis, multiple sclerosis and brain tumor. Especially in children, in the absence of history, behavior disorders and other mental disturbances may lead to a wrong diagnosis of imbecility, "moral insanity," or plain, unaccountable wickedness.

ALIMENTARY GASES

Distention of portions of the alimentary tract by gases that fail to be absorbed or discharged from it is a familiar manifestation. Not infrequently it is a condition sufficiently distressing to call for special treatment to secure relief; consequently, some appreciation of the etiology of the accumulation of gases is desirable. The kinds of the latter that have at times been reported as occurring in different regions of the gastro-enteric tract are varied, including oxygen, nitrogen, carbon dioxid, methane and hydrogen sulphid. It has long been recognized that part, at least, of the occluded gases are derived from air swallowed or inevitably entangled in the meshes of ingested food. Part may be, and doubtless is, derived from fermentative changes in the enteric contents. Furthermore, it has been realized that diffusion must go on between the contents of the alimentary tube and its environment of blood and tissue fluids, to a greater or lesser extent.

Does the character of the residual gases determine some of the symptoms they may initiate? Such a question might be asked in connection with the belching so commonly noticed in patients. Before this widespread phenomenon is attributed offhand to pressure, to gastric "neurosis"—whatever that may be—or to reflex changes, it is worth while to consider the character of the gases concerned. Several years ago, Ylppö[5] found that atmospheric air, as such, disappeared from the stomach in from forty to sixty minutes, and that the residue had a rather constant oxygen-carbon dioxid ratio, which approximated that of blood gases. In general harmony with this is the recent study of Dunn and Thompson[6] of Omaha. They, too, found that atmospheric air introduced into the stomach tends to come into equilibrium with the blood gases within one hour in the case of carbon dioxid, and considerably later, if at all, in the case of oxygen. All the carbon dioxid found in the stomach gas of normal persons, whether during fasting or after a full meal, can be accounted for by secretion or diffusion from the gastric mucosa. Although stomach contents devoid of "free" hydrochloric acid usually show evidence of fermentation with gas production, the presence of such acidity virtually precludes the production of carbon dioxid by fermentation. Consequently, the latter process can have little to do with the carbon dioxid content in the stomach gas of normal persons. As Dunn and Thompson reemphasize, the gaseous interchange in the stomach is a fundamental physiologic process governed by fixed laws.

This subject bears a relationship to the phenomenon of aerophagy, in which the repeated swallowing of air is followed by eructations of gases from the stomach. It is far from enlightening to dismiss this unique behavior as the manifestation of a neuropathic reaction. When patients suffering from cardiac or gastric disease experience relief after belching gas, they are tempted to repeat the process. To do so they must swallow more air. A study of aerophagy in the light of accurate gas analyses, Dunn and Thompson remark, may reveal "a cause of more compelling therapeutic interest for this unpleasant symptom complex than that which allows it to be viewed in the yellow light of 'neurotic perversity.'"

LIPEMIA IN DIABETES

It is an established fact that many diabetic patients exhibit not only a hyperglycemia but also an undue content of fat in the circulating blood—a lipemia. The latter has not received the amount of attention that has been given the abnormal level of the blood sugar, presumably because the latter usually discloses itself by a coincident glycosuria, and the fat estimations require a well trained analyst. If diabetes is to be interpreted as a derangement not only of the carbohydrate metabolism but also, in the severer cases, of the behavior of fat and protein in the chemical transformations of the organism, treatment may become a problem of adjusting the diet to the tolerance of the organism for each of the great classes of foodstuffs. For this reason the advocacy of a low protein, low carbohydrate, high fat diet by Newburgh and Marsh[1] has provoked considerable debate.

Ketosis is commonly regarded as an indication of inadequate metabolism of fats. It is a common manifestation of severer types of diabetes. If the high fat diet reported to be successful in the hands of Newburgh and Marsh does, in fact, allow the patients to

4. Eskuchen, Karl: Ztschr. f. d. ges. Neurol. u. Psychiat. **76**: 568, 1922.
5. Ylppö, A.: München. med. Wchnschr. **63**: 1650, 1916.
6. Dunn, A. D., and Thompson, Warren: The Carbon Dioxid and Oxygen Content of Stomach Gas in Normal Persons, Arch. Int. Med. **31**: 1 (Jan.) 1923.

1. Newburgh, L. H., and Marsh, P. L.: Use of a High Fat Diet in the Treatment of Diabetes Mellitus, Arch. Int. Med. **26**: 647 (Dec.) 1920.

become free from excretion of ketone substances, the circumstance should be reflected in a reasonably low content of blood fat. Bloor,[2] who has had a large experience in this field, regards lipemia in any event as a disturbance in the balance between inflow and outflow of fat in the blood. He assumes that diabetic lipemia represents an abnormally slow outflow.

It has become important, therefore, to ascertain by direct observation whether the mechanism for the utilization of fats breaks down in any way under the Newburgh-Marsh diabetic regimen. Blatherwick[3] has observed that patients with mild and moderate diabetes living on diets similar to those recommended by Newburgh and Marsh are apparently able to utilize satisfactorily large amounts of fat, as indicated by constancy of the blood fat level and by the absence of acetone substances in the urine. More recently, Marsh and Waller[4] have published records of diabetic patients on the same type of high fat diets in whom there was no increase in the lipoid content of the blood during the periods of observation. In fact, in some of those showing a hyperlipoidemia when first examined the total fat fell to approximately normal levels. Hence Marsh and Waller conclude that the prevalent view, which assumes that diabetic hyperlipoidemia is dependent on the excessive ingestion of fat, is unwarranted. The explanation of this phenomenon must be sought in some other unusual feature of the diabetic state.

THE THERAPY OF CERTAIN FUNCTIONAL NERVOUS DISTURBANCES

The treatment of headache or migraine, like that of fatigue, mental lethargy, and the whole complex of neurasthenia, is admittedly unsatisfactory. The reason for this lies primarily in our ignorance of the genesis of these clinical disturbances. There seems to be a crying need of immediate further studies in this field of medical research. The failure of clinical medicine to make satisfactory progress in the management of certain types of functional nervous disturbances justifies us in giving a respectful hearing to any reasonable proposal. In this spirit, reference may be made to the suggestions of Pemberton[5] that many forms of neurasthenia, headache, migraine, most cases of neuritis, certain types of mental depression and melancholia—possibly a few supposedly organic conditions—are the result of interruptions in a chain of metabolic processes. Such statements, like the frequently made claim of "suboxidation" or "impaired oxygen" as a cause of disease, mean nothing unless they can be substantiated by some sort of evidence that may be subjected to critical evaluation. Pemberton has been impressed by the similarity of the conditions mentioned to the neuropsychiatric symptoms observed in arthritic patients. He therefore assumes similar underlying causes; and since the treatment of many cases of arthritis from the standpoint of the existence of metabolic upsets has been favorable in his hands, Pemberton advocates an analogous procedure in the relief of the less complicated disturbances of the nervous functions.

For the conditions described, lowered sugar tolerance and changes in equilibrium of the blood gases and in the content of certain other constituents of the circulating medium have been among the features detected by laboratory examinations. These have been interpreted to be due to metabolic errors involving some phase of local or general oxidative functions. Treatment is therefore directed toward the relief of such conditions. As Pemberton expresses it, part of the metabolic process apparently concerned is, broadly speaking, oxidative in nature. In this is included the delivery of oxygen, the removal of the products of combustion, or both. Interruption of the normal course of events may be due to a large number of factors, among which are external physical conditions, the endocrine system, focal infection, malfunction of various viscera, and various metabolic insults. Appreciation of the general nature of this disturbance makes possible the stimulation of metabolic functions by a variety of measures, on the one hand, and adjustment of the metabolic load, on the other. A combination of the two measures is sometimes helpful or necessary.

One of the ways of "adjusting the metabolic load" is through the path of economy in diet. The load may be lightened by a reduction in food intake, often with success, as has been reported in the treatment of arthritis. Another scheme consists in the use of hydrotherapy or external application of heat, measures often attempted without much consideration of what they may actually bring about in the organism. In a recent issue of THE JOURNAL, Pemberton and Crouter[6] have indicated that the percentage oxygen saturation of the peripheral blood tends to rise with increased local or body temperature when this is caused by external heat. It was found that during electric "bakes" the sweat almost invariably changes its hydrogen-ion concentration or "reaction," whatever this may have been at the start. It is generally about neutral at the outset, but becomes more alkaline or less acid as the bake progresses. This is merely a hint of deeper seated physiologic changes.

It would be rash, indeed, to expect to find a panacea for nervous ills in any specific form of physical therapy or dietotherapy; but there can be no harm in pointing to suggested possibilities.

2. Bloor, W. R.: Lipemia, J. Biol. Chem. **49**: 201 (Nov.) 1921.
3. Blatherwick, N. R.: Observations on Blood Fat in Diabetes, J. Biol. Chem. **49**: 193 (Nov.) 1921.
4. Marsh, P. L., and Waller, H. G.: The Relation Between Ingested Fat and the Lipemia of Diabetes Mellitus, Arch. Int. Med. **31**: 63 (Jan.) 1923.
5. Pemberton, Ralph: The Nature of Certain Functional Nervous Disturbances and Their Treatment Along Metabolic Lines, Arch. Neurol. & Psychiat. **9**: 208 (Feb.) 1923.
6. Pemberton, Ralph, and Crouter, Caroline Y.: The Response to the Therapeutic Application of External Heat, J. A. M. A. **80**: 289 (Feb. 3) 1923.

THE FORMATION OF GALLSTONES

The current hypotheses regarding the formation of gallstones are numerous and somewhat discordant. A simple concentration of bile cannot be the foremost cause of concentration formation, for the secretion of the liver can be desiccated to a considerable extent without necessarily leading to the precipitation of less soluble constituents from the somewhat inspissated fluid. Of late we have been taught to believe that concentration of the bile in the gallbladder is a common physiologic phenomenon incident to the temporary storage of the secretion there. It would strain our belief in the fitness of nature to assume that the organism would commonly avail itself of a process easily liable to bring about deposition of bile constituents and consequent calculus formation. Increased concentration of cholesterol, bile pigments or calcium salts may well be contributing factors in the pathogenesis without being direct causes of cholelithiasis.

It is commonly taught, therefore, that infection of the biliary tracts usually plays a significant part in cholelithiasis. While the possible importance of the bacterial factor cannot be denied, there are evidences that infection is not the sole disturbance that may lead to the precipitation of bile constituents. It has been shown that a sterile thread inserted into the gallbladder may become encrusted with the calcium salts of the bile pigments, even though the organ remains free from infection. New demonstrations have been furnished recently by Rous, McMaster and Broun [1] of the Rockefeller Institute for Medical Research. They have observed calculus formation in the walls of tubes of rubber and glass adjusted under sterile conditions to collect bile from experimental animals. The stones were never present in the ducts themselves, and they did not occur when the collecting systems remained clear of organic débris, such as dead cells and mucus.

In the experiments just related, the stones were made up of calcium bilirubinate and calcium carbonate, with a scaffolding of organic material. Cholesterol was not demonstrable in them. The majority had a center of calcium bilirubinate surrounded by an envelop of crystalline, slightly pigmented carbonate; but stones consisting almost wholly of one or the other substance were encountered. Frequently a number of pigment stones were secondarily united in a matrix of carbonate. The relation of the calculi to the organic débris associated with them differed significantly. Those formed primarily out of carbonate originated in the midst of lumps of the débris, as the microscope showed, whereas the minute pigment stones were so situated as to suggest that they, or their original nuclei, had once been free in the bile, but had been caught in the débris and retained. Some of the pigmented calculi were large and of such shape as to leave no doubt that deposition had occurred on them in situ.

In those cases in which infection does play a determining part in gallstone formation, it seems to act, according to Rous and his co-workers, by damaging the duct walls with resulting desquamation, and by lessening the ability of the bile channels to rid themselves of the cell débris. The latter induces, or furthers, the direct deposition of solids, and may catch and retain potential nuclei for stone formation, in the shape of pigment particles from higher up in the biliary system, which would under ordinary circumstances be voided with the bile. It should be recalled that the sterility of a hollow viscus or duct is maintained in large part by its free evacuation. Any stasis produces conditions favoring the growth of micro-organisms that may happen to lodge behind an obstructing mass. Secondary infections, sometimes due to an escape of bacteria into the bile from the liver, may lead to new gallstones or new layers of old ones. Indeed, it has been asserted that many of the more serious consequences of cholelithiasis are due to such infections rather than to the mechanical effects of the biliary calculi.

1. Rous, Peyton; McMaster, P. D., and Broun, G. O.: The Experimental Production of Gall-Stones in Dogs, in the Absence of Infection, Stasis and Gall Bladder Influence upon the Bile, Proc. Soc. Exper. Biol. & Med. **20**: 128, 1922.

Current Comment

FUMIGATION WITH HYDROGEN CYANID

A deadly poison in the hands of a person not fully aware of the danger inherent in it, or lacking intelligence and skill to guard against the hazard, is as much to be feared as dynamite. Manufacturers and distributors of such poisons who entrust them to ignorant and unskilled persons should be held jointly responsible with the users for the consequences. A community that permits the sale of a deadly poison to any adult who represents that it is to be used for a lawful purpose, without requiring him to show that he knows how to safeguard against danger inherent in its use, must hold itself, too, responsible for the results. And communities, manufacturers, distributors and users may all consider seriously the recent deaths of six persons in Chicago as the result of fumigation with hydrogen cyanid. On the night of March 3, the owners of a basement restaurant in Chicago turned over the restaurant to a man engaged in the extermination of insect pests, to have the roaches destroyed by him. This he undertook to accomplish by fumigation with hydrogen cyanid, generated by the interaction of sulphuric acid and a sodium cyanid solution. The operator claims that he sealed all openings leading from the restaurant into the upper stories of the building, which were used as residential flats, and that he warned the occupants to keep their windows open during the night. After the tragedy that followed, however, it was discovered that an opening through which a water pipe passed had been overlooked, and not sealed, and that the windows of the apartment on the second floor had been closed. The hydrogen cyanid leaked from the restaurant into the apartments above, and six of the occupants lost their

lives. One man escaped, who happened to sleep, fortunately, near an open window. Hydrogen cyanid has been extensively used in the disinfestation of ships, grain elevators, greenhouses and storage warehouses, and in army camps. Always the strictest precautions have been used, and recently those engaged in the work and liable to come within range of the fumes have been equipped with gas masks. To a certain extent, hydrogen cyanid has been used for the disinfestation of dwelling houses and apartments, possibly more frequently than has been commonly recognized, for often the extermination of insects is undertaken on a commercial basis by persons who do not disclose the nature of the methods used. Here and there, a community, possibly awakened by a tragedy such as has just occurred in Chicago, has passed regulations to safeguard its people against such dangers; but generally, beyond limiting the sale of such deadly poisons as sodium cyanid and hydrocyanic ("prussic") acid to adults buying them for lawful purposes, no restrictions have been imposed. The seriousness of the situation is shown with tragic force by the accident in Chicago. The health authorities of the country should recognize the danger and take precautions against it, without waiting for deaths to occur within the communities which they serve.

THE ACTION OF DRUGS ON RESPIRATION

The remarkable coordination of the activities that characterize the phenomena of respiration has been one of the features responsible for the belief in the existence of a respiratory center in the medulla oblongata. Despite the usual exhibitions of function in which both inspiratory and expiratory muscles play their part in a well adjusted rhythm, every-day experience teaches that a certain degree of independence must exist between the two antagonistic phases of the respiratory act. In coughing, for example, the expiratory factor becomes greatly exaggerated. One mode of treatment consists in an attempt to decrease the rate of respiration by the use of drugs, familiar illustrations being afforded by the effects of alkaloids of the morphin group supposed to depress the respiratory center as a conspicuous feature of their general depressant action on the central nervous system. In a series of unusually interesting researches in the Laboratory of Pharmacology at the University of Pennsylvania, Schmidt and Harer[1] have furnished cogent evidence, for certain species at least, that some drugs may depress expiration selectively, or at least depress expiration more than inspiration. It was found to be conspicuously true of morphin and diacetylmorphin (heroin), which are looked on almost as specifics in their ability to relieve cough and to decrease the rate without affecting the depth of breathing. Various other depressants, such as ether, chloral hydrate and urethane, exhibit a marked tendency to make expiration passive without depressing inspiration; but usually they show this effect only in narcotic doses. Caffein and strychnin antagonize the depression of expiration; atropin does not. It is too early to dwell on the details of these interesting observations. If, however, they should pave the way to a cogent demonstration of the existence of a separate central nervous mechanism for the control of each of the phases of respiration, a great step in advance will be recorded. Perhaps the present conception of a respiratory center will be replaced by that of a twofold organ, an expiratory center and an inspiratory center, the former set at a higher threshold for chemical stimuli than the latter. Practical therapy is eagerly awaiting new clues for the discriminating use of drugs that act on respiration.

1. Schmidt, C. F., and Harer, W. B.: The Action of Drugs on Respiration, I, The Morphine Series, J. Exper. Med. **37**: 37 (Jan.) 1923; II, Ether, Chloroform, Chloral, Urethane, Luminal, Magnesium, Caffeine, Strychnine and Atropine, ibid. **37**: 69 (Jan.) 1923.

INCOME TAX: TRAVELING EXPENSES HELD NOT DEDUCTIBLE

The Commissioner of Internal Revenue has declined to reverse his ruling to the effect that the traveling expenses of a physician incident to attendance at a meeting of a medical society are not ordinary and necessary expenses incurred incident to the practice of medicine, and that they are, therefore, not deductible. Physicians are advised to file their returns without taking credit for any traveling expenses that they may have incurred by reason of attendance at such meetings. The ruling in this case seems so clearly inconsistent with the law and with the practice of the Bureau of Internal Revenue with respect to deductions for traveling expenses under other circumstances that efforts will be continued to obtain a review of the decision and its reversal.

Association News

THE SAN FRANCISCO SESSION

Scientific Exhibit

The following have been appointed on the Advisory Committee of the Scientific Exhibit: Dr. Charles C. Bass, New Orleans; Dr. Frank W. Hinman, San Francisco; Dr. W. T. Longcope, Baltimore; Dr. H. E. Robertson, Rochester, Minn., and Dr. Rea Smith, Los Angeles. The Committee from the Board of Trustees consists of Dr. D. Chester Brown, Chairman; Dr. Frank Billings, and Dr. Wendell C. Phillips.

The Scientific Exhibit will be located on the main floor of the Civic Memorial Auditorium. The Registration Bureau, Information Bureau and Commercial Exhibit will be on the same floor; also the sections will meet in this building, so that here will be the center of activities.

The Committee on Scientific Exhibit is desirous that the exhibits shall be presented in a way which will emphasize their scientific value; this may be done by carefully worded explanatory placards and by personal demonstration. Also, the general attractiveness of the exhibit is very essential, and to aid in the appearance, the Committee on Scientific Exhibit will do its part by having the booths appropriately painted.

In connection with the exhibits there will be a motion picture theater for the exhibition of lantern slides and motion pictures.

Application forms may be obtained from the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago. The committee will make no assignments previous to May 1, in order that the amount of space available may be apportioned to the best advantage of all concerned. All applications must be received before this date.

San Francisco Hotels and Rates

The following partial list of San Francisco's leading hotels has been submitted to THE JOURNAL by Dr. W. E. Musgrave, chairman of the Local Committee of Arrangements. It will be noted that in certain instances it is stated definitely whether the rates apply to single or double rooms, while in other instances this information is not given in the list. It will also be noted that three hotels marked with an asterisk have already booked their capacities, and no further reservations are available. Those who wish to secure hotel accommodations at San Francisco may write direct to any hotel listed below or to Dr. W. E. Musgrave, Chairman, Local Committee of Arrangements, 806 Balboa Building, San Francisco.

LEADING HOTELS OF SAN FRANCISCO (ALL EUROPEAN PLAN), THEIR LOCATION AND RATES

Hotel	Street Address	With Bath	
		Single	Double
Argonaut	4th and Market Sts.	$2.00–$2.50	$3.00–$3.50
Baldwin	321 Grant Ave.		3.00
Bellevue	Geary and Taylor Sts.	3.50	5.00
Cartwright	524 Sutter St.	2.50– 3.00	3.00– 4.00
Cecil	545 Post St.	8.00	12.00
Chancellor	433 Powell St.	2.50	3.50– 4.00
Clark	217 Eddy St.	2.00	2.50
Clift	Geary and Taylor Sts.		8.00
Court	205 Bush St.	3.00	4.00
*Fairmont	California and Mason.		7.00–10.00
Federal	1087 Market St.	2.50, 3.00, 3.50	
Golden West	Powell and Ellis	3.00–4.00	
Grand	57 Taylor St.	2.00, 2.50, 3.00	
Herbert's (men only)	151 Powell St.	2.00–3.00	
Keystone	54 Fourth St.	2.50–3.50	
Lankershim	55 Fifth St.	3.50	
Larne	210 Ellis St.	3.00–4.50	
Manx	Powell and O'Farrell.	4.00–5.00	
*Palace		8.00–10.00	
Plaza	Post and Stockton Sts.	5.00–6.00	
Richelieu	Geary & Van Ness Ave.	5.00 (single or double)	
Somerton	440 Geary St.	2.00–4.00	
St. Francis	Union Square	4.00–10.00	
Stewart	353 Geary St.	3.50–7.00	
Sutter	Sutter and Kearny Sts.	4.00	
Stratford	Powell and Geary	6.00	
Turpin	Powell at Market St.	3.00–3.50	
Victoria	Bush & Stockton Sts.	2.50–4.00	
*Whitcomb	Market & Civic Center	4.00–8.00	
Wiltshire	340 Stockton St.	3.00–4.50	

* Reservations all booked.

Invitation from Medical Society of Hawaii and Governor Farrington

The following telegram, transmitted by wireless to San Francisco and thence by usual telegraphic communication, has been received at the offices of the American Medical Association:

I am pleased transmit cordial invitation of Medical Society of Hawaii to Fellows and members American Medical Association visit Hawaii after Annual Meeting San Francisco. I trust large number your members be able accept. Farrington, Governor Hawaii.

Steamship Service Between Los Angeles and San Francisco

Those who go by way of Los Angeles to the annual session may proceed from Los Angeles to San Francisco by steamship if they will stipulate when tickets are purchased that they read via the Los Angeles Steamship Company. No additional charge will then be incurred. The Steamships *Yale* and *Harvard* of this company operate four times a week each way between San Francisco and Los Angeles, leaving Los Angeles at 4 p. m. every Tuesday, Wednesday, Friday and Sunday. Eighteen hours is required for the ocean trip from Los Angeles to San Francisco.

Special Train for Massachusetts Medical Society

A special tour for the Massachusetts Medical Society has been arranged under the direction of the Raymond and Whitcomb Company for the Fellows of that society and their friends who will attend the Annual Session. Leaving Boston at 2:10 p. m., June 14, the Massachusetts party will go to San Francisco by way of Chicago, Colorado Springs, the Royal Gorge, Salt Lake City, Riverside, Los Angeles, Yosemite and Big Trees, reaching San Francisco, Sunday, June 24. The return trip may be made either by way of Portland, Seattle, Vancouver and the Canadian Rockies, or by the direct Overland route by way of Ogden, Omaha and Chicago. For more detailed information concerning this tour communicate with the Raymond and Whitcomb Company, 112 South Dearborn Street, Chicago, or 17 Temple Place, Boston.

ANNUAL CONGRESS ON MEDICAL EDUCATION, MEDICAL LICENSURE, PUBLIC HEALTH AND HOSPITALS

The annual congress met in the Florentine Room of the Congress Hotel, March 5, at 9:30 a. m., and was called to order by Dr. Arthur Dean Bevan, chairman of the Council on Medical Education and Hospitals. Dr. Louis B. Wilson, Rochester, Minn., presented a report of the Committee on Graduate Medical Education. Dr. E. Stanley Ryerson, secretary of the Faculty of Medicine of the University of Toronto, presented a paper on "Coordination of the Courses as a Means of Increasing the Efficiency of the Medical Curriculum." Dr. Arthur Dean Bevan presented a plan for revision of the medical curriculum. There was a full discussion. Dr. Robert W. Lovett, chairman, presented a preliminary report of the Committee on Trained Nursing and Dr. Richard Olding Beard of Minneapolis presented a minority report for this committee.

At the afternoon session a paper by Dr. H. M. Platter, secretary of the Ohio State Medical Board, was presented on the "Enforcement of the Medical Practice Act." Dr. K. C. Babcock of the University of Illinois read a paper, "Some Needed Revisions in Medical Licensure." Dr. Alexander Macalister discussed "The Hospital Intern Year as an Essential for the License." Dr. C. F. Humiston discussed the new medical practice act for the state of Illinois.

At the session of Tuesday, March 6, the following papers were read and discussed:

Medical Education: "The Danger of the Stereotyped Curriculum," Dr. Charles P. Emerson, dean and professor of medicine of the Indiana University School of Medicine, Indianapolis. "Present Ideals of the Physical Plant in Medical Education": (*a*) Dr. Charles R. Bardeen, dean and professor of anatomy of the University of Wisconsin Medical School, Madison; (*b*) Dr. G. Canby Robinson, dean, Vanderbilt University School of Medicine, Nashville, Tenn. "The Art of Medicine," Dr. Irving S. Cutter, dean, University of Nebraska College of Medicine, Omaha.

Hospital Service: Introductory remarks, Dr. Frank Billings, president of the American Conference on Hospital Service, Chicago. "The Rôle of Nonmedical Clinical Assistants in Hospitals, Without Interns," Dr. S. S. Goldwater, director, and Dr. W. M. Bluestone, assistant director, Mount Sinai Hospital, New York; discussed by Drs. Charles P. Emerson, John M. Dodson and N. P. Colwell. "Liability of the Hospital for the Acts of Its Servants," John A. Lapp, director, Department of Social Action, National Catholic Welfare Council, Chicago; discussed by Drs. M. L. Harris and A. R. Warner. "The Relation of the State University Hospital to the Medical Profession," Dr. C. P. Howard, professor of medicine, State University of Iowa College of Medicine, Iowa City; discussed by Drs. Ray Lyman Wilbur, Irving S. Cutter and C. R. Bardeen. Annual report of the Hospital Library and Service Bureau, by the director, Miss Donelda R. Hamlin, Chicago. A complete report of these sessions will appear in THE JOURNAL next week.

Statue of Jenner in Japan.—On the west coast of Japan in a small fishing town, until recently very isolated and formerly ravaged by smallpox, there stands a monument to Edward Jenner, erected by a grateful people.—*Med. Press*, Feb. 7, 1923.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALASKA

Medical Missionary Needed.—It is announced by the director of educational work for the Presbyterian Board of Home Missions of New York that a medical missionary is urgently needed for Cape Prince of Wales.

ARIZONA

Date of State Medical Meeting Changed.—The thirty-second annual meeting of the Arizona Medical Association will be held at Grand Canyon, June 21-22, instead of at Phoenix in April, as previously announced. The change was made so that the meeting would just precede that of the American Medical Association in San Francisco. Dr. A. L. Gustetter, Nogales, is president of the society, and Dr. D. F. Harbridge, Phoenix, secretary.

CALIFORNIA

Dr. Deacon Exonerated.—Dr. George Deacon, Pasadena, who, it is alleged, was charged with administering narcotics to an addict, was exonerated by the state board of medical examiners at Los Angeles, February 14.

University Promotions.—Twenty-five members of the faculty of Stanford University School of Medicine, San Francisco, have been given promotions, it was announced, February 21. The following associate professors have been promoted to professorships: Dr. Frank E. Blaisdell, surgery; Dr. John F. Cowan, surgery; Dr. Charles H. Danforth, anatomy; Dr. Ernest C. Dickson, medicine; Dr. Leonard W. Ely, orthopedics; Dr. Harold K. Faber, pediatrics. Assistant professors becoming associate professors are: Dr. W. Edward Chamberlain, radiology; Elmer E. Drew, physics; Dr. Ludwig A. Emge, obstetrics and gynecology; Dr. Henry G. Mehrtens, neurology, and Dr. Clelia D. Mosher, personal hygiene and medical adviser to women. Dr. Albert V. Pettitt, formerly instructor in obstetrics and gynecology, is now assistant professor.

CONNECTICUT

Epidemic (Lethargic) Encephalitis in Connecticut.—The first cases of epidemic (lethargic) encephalitis in Connecticut were reported in 1919, the bureau of preventable diseases announces. There were forty cases reported in 1920; seventy-four in 1921, and forty-seven in 1922. Since January 1 of this year, thirty cases have been reported. The increase in the number of cases this year it is said, may be due to an increased interest in the disease and more accurate diagnosis. Encephalitis was made reportable to the state department of health, Nov. 11, 1921.

ILLINOIS

Chicago

Cook County Medical Examiner Appointed.—Dr. Frank J. Pokorney, Chicago, has been appointed medical examiner for Cook County, it was announced by the president of the board of county commissioners, March 3. Preparation of a county civil service eligible list and the necessity for examination by a physician of many of the applicants caused the appointment of Dr. Pokorney. All persons about to be retired from the county's service on pensions or because of disability will also be examined.

Tuberculosis Conference.—The executive officers of the National Tuberculosis Association held a three day session at the Hotel LaSalle, February 26-28. It was stated there are 65,000 hospital beds available for tuberculous patients in the United States and that there are more than 1,000,000 cases of the disease. A standard system of home treatment teaching which would permit the discharge of a patient from the sanatorium in three months was outlined. A visiting service would care for the patient following his discharge. A total of $5,000,000 was the goal set by the conference for 1923.

Hospital News.—The campaign to collect two thirds of a million dollars which was necessary before one third of a million left by the will of John P. Wilson, for the benefit of the Children's Memorial Hospital, could be secured, was successfully completed, March 3.——Work will soon start on the nurses' home to be erected by Michael Reese Hospital. ——The cornerstone for the training school for home and public nursing at Monroe and Loomis streets, was laid, February 18. The building will also house free dental clinics for the children of Chicago. Money for this project was derived from the Pageant of Progress exhibitions.

INDIANA

Epidemic Bacillary Conjunctivitis.—Reports from Gilead state that pink-eye is prevalent in the local schools. In some schools the incidence of the malady has been 100 per cent. of the pupils.

Child Hygiene.—The child hygiene division of the state board of health recently conducted a two weeks clinic in Clinton County. Lectures were given on child welfare, and moving pictures on health were shown in the public schools.

Dinner for Dr. Bloodgood.—Dr. Joseph C. Bloodgood, Johns Hopkins University, Baltimore, was the guest of honor at a dinner given by the Terre Haute Academy of Medicine, February 2. Following the dinner Dr. Bloodgood gave a stereopticon lecture on "Cancer of the Breast."

Distribution of "Patent Medicines" to Be Stopped.—The city health department of Indianapolis, of which Dr. Herman Morgan is secretary, is taking steps to stop the practice of distributing samples of "patent medicines" on porches of homes in Indianapolis. This practice is in violation of a city ordinance, which prohibits the distribution of samples of medicine, except by handing the samples directly to adults.

Personal.—Dr. Charles J. McIntyre has been elected president of the Indianapolis Association for the Prevention and Relief of Heart Disease.——Drs. Noah H. Thompson and Walter A. Domer were hosts at a banquet for the members of the Wabash County Medical Society at the Indiana Hotel, Wabash, February 15.——Dr. William M. Varble, Jeffersonville, has been elected secretary of the board of health of Clark County to succeed the late Dr. David C. Peyton.

IOWA

University News.—The medical library of Sir Norman Walker of Edinburgh University, Scotland, has been offered to the State University of Iowa College of Medicine, Iowa City, through Dr. Walter L. Bierring, Des Moines. The gift has been accepted by the university. Sir Norman visited the university two years ago as a member of a commission of European physicians and surgeons and was favorably impressed by the medical work being done at the university.

Personal.—Dr. John J. Lambert, professor at the State University of Iowa College of Medicine, won the golf championship of Iowa City and Iowa University recently on the Country Club links.—Dr. John J. B. Morgan, director of the psychologic clinic in the State University of Iowa College of Medicine, Iowa City, addressed the twenty-third annual meeting of the Nebraska Conference of Social Workers at Omaha, February 12, on "The Menace of the Feebleminded."——President Harding has dismissed Surg. Waldo H. Sanford, Colfax, from the U. S. Public Health Service, it is reported.

KANSAS

Physician Convicted of Murder.—The Kansas Board of Medical Registration and Examination reports the revocation of the license of Dr. W. A. Nixon, Great Bend. He was convicted of murder in the first degree, and was sentenced to the state penitentiary at Lansing for life.

KENTUCKY

Health Board to Conduct Free Examinations.—Free physical examinations will be given to many thousands in Louisville under supervision of the faculties of the medical and dental colleges of the University of Louisville, it was announced, February 17, by Dr. Arthur McCormack, secretary of the state board of health, following a joint meeting of the faculties, the deans of the colleges and representatives of the board of health. The work will be done through the cooperation of the university officials with the Jefferson County Medical Society and the county dental society. This is the first step in a movement to demonstrate to the public the importance of periodic physical examinations for everybody, as a measure to reduce the death rate from preventable disease.

LOUISIANA

Hospital News.—A state-wide campaign to collect $400,000 for the Charity Hospital, New Orleans, will be inaugurated, May 12, National Hospital Day.

MAINE

Androscoggin Sanatorium Reopened.—The tuberculosis sanatorium owned by the Androscoggin Antituberculosis Association, used until recently by the federal government for the care of ex-service men, has been reopened by the association for local use. Dr. Ralph Goodwin is the physician in charge.

MARYLAND

Epidemic (Lethargic) Encephalitis to Be Investigated.—Dr. William T. Howard, former assistant commissioner of health, and Dr. John F. Hogan, director of the bureau of communicable diseases, Baltimore City Health Department, are studying the epidemic (lethargic) encephalitis situation in Baltimore, at the request of the state commissioner of health. The investigation will cover records in Baltimore for many years past, in order to obtain information on which to base an accurate statement as to the nature and cause of the present outbreak.

Influenza and Pneumonia Records for Month.—Seventy-nine deaths from influenza and 2,641 cases of the disease were reported in Baltimore during the month of February, according to a bulletin issued by the Baltimore City Health Department. There were 376 cases of bronchopneumonia, with 158 deaths. Of lobar pneumonia, there were 292 cases, with 102 deaths. During the month, seven cases of epidemic (lethargic) encephalitis were reported and six deaths, the heaviest monthly toll in the recent history of the health department. The influenza situation is showing considerable improvement.

Personal.—Dr. Thomas S. Cullen, professor of clinical gynecology at the Johns Hopkins Medical School and visiting gynecologist at the hospital, is a patient in the hospital, where he recently underwent an operation for gallstones.——Dr. Thomas B. Futcher, associate professor of clinical medicine at the Johns Hopkins Hospital, is a patient at the Johns Hopkins Hospital, suffering from an attack of pneumonia. Dr. Daniel Jenifer has been appointed a health officer for Baltimore County, succeeding Dr. John S. Green, resigned.——Dr. John W. Ebert has been appointed physician to the Baltimore County Jail, at Towson, succeeding the late Dr. Joshua Royston Green.——Dr. Arthur P. Herring, commissioner of mental hygiene for Maryland, spoke to the members of the Democratic Women's Club of Baltimore, March 1, on "The Mental Hygiene Clinic."

MASSACHUSETTS

Illegal Practitioner Sentenced.—According to press reports, Robert Thompson, Boston, was found guilty in the Suffolk superior criminal court, recently, and sentenced to three months in jail, for practicing medicine without a license.

Entire Hospital Staff Resigns.—Twenty-one members of the staff of the Quincy City Hospital, including Chief-of-Staff N. S. Hunting, resigned in a body, February 18. Recent changes in the management were said to be responsible for the resignations. Mayor Bates announced, February 20, that he had obtained a staff of physicians to replace those who resigned.

Boylston Medical Prize Awarded.—The Boylston Medical Prize of Harvard Medical School, Boston, has been awarded by a committee composed of Drs. Reid Hunt, William T. Porter, John Warren and Henry A. Christian to Prof. Alfred N. Richards, Ph.D., and Dr. Joseph T. Wearn of the University of Pennsylvania, Philadelphia, for an essay entitled, "Observation on the Composition of the Glomerular Urine with Particular Reference to the Problem of Reabsorption in the Renal Tubules." The prize awarded was $500.

Dinner to Dr. Schick.—Under the auspices of the state board of health, the city board of health and the department of preventive medicine and hygiene of Harvard University Medical School, a dinner was given in honor of Dr. Béla Schick of Vienna at the Hotel Lenox, Boston, February 8. Dr. Francis X. Mahoney, city health commissioner of Boston, presided, and Dr. Rosenau was toastmaster. Dr. Schick was presented with a gold set of the equipment used by the city Schick staff. It was announced that 30,000 children in the city of Boston have been Schick tested since May 1, 1922.

White Memorial Fund Health Unit.—The trustees of the George Robert White fund have awarded the contract for the construction of the first health unit to be erected with the income from the fund. The building will be erected on the site of the old police station at Commercial and Battery streets. The total cost will be about $185,000. The building will be three stories high, and will contain an auditorium, an emergency hospital, dental clinics, medical examination rooms and the quarters for the district nursing association. Health Commissioner Mahoney expects to appoint the nurses, physicians and dentists for the clinic about December 1.

MICHIGAN

The Beaumont Lectures.—The Beaumont Lectures for 1923 were delivered before the Wayne County Medical Society at Detroit, January 29-30. Dr. J. R. Macleod, professor of physiology at the University of Toronto, Canada, delivered the first two lectures on "The Physiology and Pathology of the Pancreas and the Demonstration of New Discoveries of Pancreatic Hormones." The third lecture was delivered by Dr. F. G. Banting of the University of Toronto, on "Clinical Work on Insulin."

MINNESOTA

Epidemic (Lethargic) Encephalitis in the State.—Between thirty and thirty-six cases of epidemic (lethargic) encephalitis have been reported in Minnesota, according to records of the state department of health. Dr. A. J. Chesley, secretary, stated that the cases are distributed in the following counties: Anoka, Hennepin, Lake, Ramsey, Stevens, Ottertail, St. Louis, Olay, Polk, Swift, Faribault, Goodhue and Big Stone.

Personal.—Dr. Albert J. Chesley, executive officer of the state board of health, has been awarded the Cross of Valor of Poland for his services in that country during the World War.——Dr. Henry F. Helmholz of the Mayo Clinic, Rochester, spoke on "Diagnosis and Treatment of Pyelitis in Infancy and Childhood" before the Jackson County Medical Society at Kansas City, Mo., February 20.——Dr. Arthur T. Laird, Nopeming State Tuberculosis Sanatorium, St. Louis County, was recently elected president of the Minnesota Occupational Therapy Association in Minneapolis.——Dr. Hazel Bonness of the state board of health has been appointed chief of the division of child welfare of the Montana Board of Health.

MISSOURI

Health Unit Organized.—In accordance with the recent decision of the St. Louis County Court to adopt a health unit system to replace the office of health commissioner for the county, Dr. William F. O'Malley, Webster Groves, was appointed head of the unit, February 23, for a period of three years.

Professor Hinrichs Dead.—Reports have been received of the death of Gustavus Detlef Hinrichs, a graduate of the University of Copenhagen and for many years professor of chemistry in St. Louis University School of Medicine. Professor Hinrichs founded in 1875 the first state weather service in the United States. Nearly fifty volumes of scientific memoirs in German, Danish, English and French came from his pen.

St. Luke's Hospital Opened.—St. Luke's Hospital, Kansas City, was formally opened to the public, February 25, by the Rev. Sidney Partridge, bishop of the Protestant Episcopal Diocese of Western Missouri. This institution, which was built and equipped at a cost of nearly $700,000, has accommodation for 125 patients; but when fully completed will have a capacity of 400. One entire floor is designed and reserved especially for obstetric patients.

NEW HAMPSHIRE

Antivaccination Bill.—A bill has been introduced into the legislature of New Hampshire which provides that children of parents opposed to vaccination be exempted from the requirement that they be vaccinated before attending school.

NEW MEXICO

State Medical Meeting.—The forty-first annual meeting of the New Mexico Medical Society will be held at Albuquerque, June 19-21, under the presidency of Dr. Harry A. Miller, Clovis, just preceding the annual session of the American Medical Association.

NEW YORK

A Birth Control Bill.—There is before the New York State Legislature a bill entitled "An act to amend the penal code relative to the furnishing by physicians of information and

articles for the prevention of conception." The text of the bill provides that

> The giving by a physician to any person, married or having a license to be married, of any information or advice in regard to the prevention of conception, on application of such a person to a physician, is not an offense, neither is it an offense to supply, on written prescription of a physician, any article, instrument, drug, receipt or medicine for the prevention of conception.

Physicians' Signatures Forged for Liquor.—According to an announcement made by Gus J. Somons, chief prohibition officer of the state, signatures of physicians have been forged to prescriptions for liquor in a systematic manner, and many unscrupulous physicians and druggists are supplying liquor. As one method of obtaining signatures men representing themselves as prohibition agents visit physicians to check up on signatures and get copies of the physicians' signatures on pads. These signatures are then forged on prescriptions, and the prescriptions are sold to druggists at prices varying from $1 to $1.50 each.

Investigation Into Causes of Ward's Island Fire.—An investigation into the causes of the Ward's Island fire, in which twenty-five lives were lost, was conducted jointly by the state hospital commission and a committee from the board of managers of the hospital. It is understood that no agreement has been reached as to the exact cause of the fire. Governor Smith, in a special message to the legislature, recommends submitting to the voters of the state a proposal for a bond issue of $50,000,000 for the erection of new state hospital buildings as well as an appropriation of $1,438,950 for urgent repairs and the removal of fire hazards at these institutions.

New York City

Fellowship in Pathology Founded at Mount Sinai Hospital.—A dinner was tendered Dr. Emanuel Libman, February 23, by his associates and pupils as a tribute to his twenty-five years of active service as associate pathologist to Mount Sinai Hospital. Dr. Frederick S. Mandlebaum, pathologist of the hospital, was toastmaster. Following the dinner, it was announced that a fund of $25,000 had been completed to found the Emanuel Libman fellowship in pathology.

Personal.—Dr. Simon Flexner delivered an address on "Poliomyelitis, Encephalitis and Allied Conditions" before the section on biology of the Academy of Sciences of the American Museum of Natural History, recently.——A reception was given recently in New York in honor of Dr. Rosalie S. Morton and Senator Royal S. Copeland. Dr. Morton, who was head of the American Women's Hospital during the World War, was recently decorated by the French government.

Cancer Society Meets.—The annual meeting of the American Society for the Control of Cancer was held, March 3, in the Pennsylvania Terminal Building. The following officers were elected for the coming year: Dr. Rudolph Matas, New Orleans, vice chairman; Dr. Howard C. Taylor, vice president; Calvert Brewer, secretary, and Thomas M. Debevoise, treasurer. The board of directors has elected the following physicians as members of the executive committee: Howard C. Taylor, Clement Cleveland, Haven Emerson, John C. A. Gerster, Howard Lilienthal, George H. Semken, Francis Carter Wood, Joseph Colt Bloodgood, Thomas S. Cullen, Robert B. Greenough and Edward Reynolds.

Hospital News.—The Polyclinic Hospital, which was turned over to the government in 1918 for the treatment of disabled veterans, was formally opened to the public, February 27, with memorial services for its founder, Dr. John A. Wyeth. The hospital has been renovated throughout.——A section of ground at Fifty-Fourth Street and Twelfth Avenue, originally bought by the New York Hospital for a site for a new building, has been sold for commercial purposes. According to the present plan, the hospital is to remain in its present location and an emergency hospital is to be built up-town. ——The building at No. 31 Washington Square, now occupied by the Washington Square Hospital, has been sold, and will be remodeled into apartments when the hospital lease expires. ——The trustees of Beth David Hospital held their annual banquet at the Hotel Commodore, February 4. More than 400 persons attended. Among the speakers were Bird S. Coler, commissioner of public welfare, and Dr. Royal S. Copeland.

Low Infant Death Rates.—According to Dr. Otto R. Eichel, director of the division of vital statistics of the New York State Health Department, Canandaigua, New Rochelle, Ossining, White Plains and Glen Falls have the best records among up-state cities in respect to infant mortality in 1922. In Canandaigua, the death rate of babies per thousand born alive was 38; in New Rochelle, 48; in Ossining, 52; in White Plains, 53, and in Glen Falls, 54. Five years ago, the infant mortality rate in New Rochelle was 96. In many other cities in this state, the results of child welfare work is equally striking. The Union Hospital in the Bronx has just compiled statistics showing that the death rate for infants in that borough is the lowest in the city for the first two months of 1923. In February, it was 69.8 for every thousand babies under 1 year, while in Queens it was 100.6, and in Manhattan, 92.3. The infant death rate for the entire city for the first six weeks of this year was 75, in comparison with 89 during the same period last year.

NORTH CAROLINA

Epidemic of Measles.—Dr. Amzi J. Ellington, health officer of Goldsboro, reports 462 cases of measles in the city, 135 occurring in one week and thirty in one day. No fatalities have been reported. Goldsboro has a population of 11,296.

Personal.—Dr. Charles Daligny has been elected county health officer of Montgomery County.——Dr. Bomar A. Olds, Henderson, health officer of Vance County, has resigned to accept a position with the Rocky Mount Sanatorium. Dr. Fletcher H. Harris, Henderson, will succeed Dr. Olds.

OKLAHOMA

Hospital News.—The Durant Memorial Hospital at Durant will be purchased by several local physicians and operated under the direction of the Bryan County Medical Society, it was recently announced.

OREGON

Tuberculosis Association Meets.—At the annual meeting of the Oregon Tuberculosis Association held in Portland, February 23, A. L. Mills was reelected president. Dr. Caroline Hedger, Chicago, was the principal speaker at the meeting. It was announced that receipts from the Christmas seal sale amounted to nearly $40,000.

PENNSYLVANIA

Philadelphia

Personal.—Dr. Florence E. Kraker, who was given a year's leave of absence from the Pennsylvania Women's Medical College, where she is lecturer on obstetrics, has arrived in Shanghai to establish a department of obstetrics for Chinese women medical students.——Dr. W. M. L. Coplin, Philadelphia, has published a history of Base Hospital No. 38, the Jefferson Medical College Unit.——Harry Dee Brown has been appointed director of the Philadelphia Health Council and Tuberculosis Committee, to succeed Dr. Blair Spencer, who resigned several months ago. Mr. Brown, who leaves a position with the New York State Committee on Tuberculosis and Public Health, has been engaged in the war against tuberculosis for nearly fifteen years.

SOUTH CAROLINA

State Medical Meeting.—The South Carolina Medical Association will hold its seventy-fifth anniversary home-coming meeting in the city of Charleston, April 17-19, under the presidency of Dr. C. F. Williams of Columbia. It is desired to get in touch with every South Carolina physician living outside the state, and every graduate of the Medical College of South Carolina. Communications should be addressed to the secretary, Dr. E. A. Hines, Seneca.

TEXAS

State Health Commissioner Appointed.—Dr. William H. Beazley, Lufkin, was appointed state health officer by Governor Neff, February 21, in succession to Dr. J. H. Florence. Dr. Beazley has been acting health officer since Dr. Florence's resignation, January 1.

Cousins Medical Bill Passed by State.—The senate, February 16, passed finally the Cousins medical practice bill, by a vote of 23 to 1. The power to revoke licenses of physicians, vested in the original bill in the state board of medical examiners, was placed by amendment in the district courts. Penalty for violation of the provisions of the bill was reduced by amendment from two to four years in the penitentiary to not more than six months in the county jail or one to four years in the penitentiary. An effort early in the day to exempt chiropractors from the provisions of the bill failed when the motion to that effect was tabled, 16 to 4.

VIRGINIA

Hospital News.—The contract has been let for the construction of the Virginia Baptist Hospital, Lynchburg, at a cost of approximately $200,000.

WISCONSIN

Physician Put on Probation.—It is reported that Dr. William G. Wheeler, Racine, who was found guilty on a charge of manslaughter, growing out of an illegal operation, was recently put on four years' probation, under the state board of control.

Personal.—Dr. Wade H. Fortner, Princeton, who has served as city physician for several terms, has been reappointed for another period of two years.——Dr. L. A. Steffen, Antigo, has been appointed a member of the state board of health to succeed his father, the late Dr. I. D. Steffen.

New Secretary for State Society.—Following the lead of the state medical societies of Ohio and Virginia, the State Medical Society of Wisconsin has employed a fulltime lay executive secretary. The council at its annual meeting, January 29, elected Mr. J. G. Crownhart, Madison, to fill the position, with headquarters in Milwaukee. In addition to his duties as secretary, he will, under direction of the council, be the business manager of the association and managing editor of the *Wisconsin Medical Journal*. Dr. L. Rock Sleyster, Wauwatosa, who is giving up the work after ten years of service, will remain as editor of the state journal and as delegate to the American Medical Association.

WYOMING

Eugenics Law Passed.—The state legislature of Wyoming has passed a law under the terms of which a prospective bridegroom must present a physician's certificate showing that he is free from venereal disease in communicable form before a marriage certificate will be issued to him.

HAWAII

Effect of Vaccinia on Leprosy.—The U. S. Public Health Service for January 5 describes the results of vaccination of a number of lepers in the Kalihi Hospital at Honolulu. Twenty-seven patients were vaccinated. Of these, sixteen had the nodular type, four the anesthetic type and seven the mixed. Vaccination was successful in nineteen cases. In the persons unsuccessfully vaccinated, no evidence of any change of the leprous lesions was noted. Of the nineteen successfully vaccinated patients, eleven developed acute leprous eruptions in the two weeks following the date of vaccination; in eight cases there was no apparent change in the leprous lesions.

PORTO RICO

Personal.—Dr. Manuel Pavía has returned to Porto Rico from the United States, where he visited the principal medical centers. He is a member of the legislature of Porto Rico and returned to be present at its opening.——The *Bulletin* of the Porto Rico Medical Association states that Dr. Esteban García Cabrera has left for the United States and will visit the institutions studying genito-urinary problems.

GENERAL

Meeting of Medical Women.—The annual session of the Medical Women's Association will be held in San Francisco, June 25-26, under the presidency of Dr. Grace N. Kimball, Poughkeepsie, N. Y., at the same time as the annual meeting of the American Medical Association. Dr. Kate Campbell Hurd Mead, Middletown, Conn., is president-elect. Headquarters will be at the Hotel Plaza.

Association of American Medical Colleges.—At the thirty-third annual meeting of the association, at Ann Arbor, March 2-3, the following officers were elected: president, Dr. Irving S. Cutter, Omaha; vice president, Dr. Ray Lyman Wilbur, San Francisco; secretary, Dr. Frederick C. Zapffe, Chicago; executive council, Dr. Nathaniel C. Allison, St. Louis, and Dr. Walter L. Niles, New York. The next annual meeting will be held at Omaha.

Birth Rate Decreasing.—According to statistics compiled by the provisional census bureau of the department of commerce, the birth rate declined and the death rate increased during the last nine months of 1922. The mortality rate ranged from 7.8 in Idaho to 14.3 in Maine, and averaged 11.7 in the states from which statistics were taken for each thousand of population in the period, as compared with an average of 11.6 during the first nine months of 1921. The birth rate ranged from 18.3, in Washington, to 30, in North Carolina, and averaged 22.8 in the first nine months of 1922, as compared with an average of 25 in the same period in 1921.

Filled Milk Bill Passes.—The Filled Milk bill that previously had passed the House of Representatives was adopted by the Senate in the closing days of Congress and thereby was enacted into a law. It declares filled milk an adulterated article of food, injurious to public health, and states that its sale constitutes a fraud on the public. In defining filled milk, it is referred to as any milk, cream or skimmed milk, whether or not condensed, evaporated, concentrated, powdered, dried or desiccated to which has been added or with which is blended any fat or oil other than milk fat. The measure was opposed vigorously throughout the country by manufacturers of filled milk.

Joint Resolution on Narcotics Passes.—House Joint Resolution No. 430, calling on the President to urge the governments of Great Britain, Persia and Turkey to limit the production of opium and the growth of the poppy, and on the governments of Peru, Bolivia and the Netherlands to curtail the production of coca leaves, passed both houses of Congress before adjournment, March 4. The resolution prescribed that the minimum production of these narcotics be fixed at the amount necessary for strictly medicinal and scientific purposes. In both houses of Congress the measure went through without a record vote, the sentiment being strongly in favor of its adoption so that no time would be lost in appealing to these foreign governments to stop the increase in the consumption of these habit-forming drugs, both by the American people and by people of other countries. The President is requested in the resolution to report back to Congress on the first Monday in December, 1923, the result of his action.

Cornerstone of Gorgas Memorial Institute Laid.—The cornerstone of the Gorgas Memorial Institute for research in tropical diseases and the study of preventive medicine was laid, February 18, in the exposition grounds in the city of Panama. Dr. Belisario Porras, president of the Republic of Panama, and originator of the Gorgas Memorial Institute idea, was the principal speaker. Dr. Porras contrasted the Panama of his student days with that of today. He said it was the most natural thing in the old days to pass friends in the streets who were hurrying home in the grip of malarial chills, or with some other pernicious fever, but that, thanks to Gorgas, the tropics have been redeemed, and Panama has been made one of the healthiest cities. Drs. Franklin H. Martin, acting president of the institute, and Augusto S. Boyd, responded to Dr. Porras' address. Bronze medals commemorating the event were distributed. Following the ceremonies, a reception was given at the presidential palace. The institute will be governed by a board of directors of which Rear Admiral W. C. Braisted, retired, is president. Dr. Richard P. Strong, director of the Harvard University School of Tropical Medicine, has been chosen scientific director.

LATIN AMERICA

Mexican Society Elects Officers.—The Monterey branch of the Mexican Medical Association has elected officers as follows: president, Dr. José Barargán; secretary, Dr. Jesús Lozano; treasurer, Dr. Cristóbal Guajardo.

New Medical Practice Act in Colombia.—A recent law adopted in Colombia restricts the practice of medicine to graduates from Colombian schools or from countries having reciprocity agreements with Colombia, and Colombians graduating from foreign schools. In communities having no regular physician, permission to practice medicine, but not surgery, will be granted any individual with a good reputation who is endorsed by at least twenty-five prominent persons. Foreign physicians will be allowed to practice only after passing a written and practical examination in Spanish before a board, the subjects being prescribed by the Bogotá medical faculty. The fees for foreigners will include all the fees charged students during their entire course, plus 200 pesos.

FOREIGN

Royal College of Physicians of London.—The recently issued list of fellows, members, and licentiates of the college contains the names of 370 fellows, 600 members and 14,448 licentiates.

New British Medical Journal.—*Nutrition and Pediatrics* is the title of a new British publication dealing with the diet and disorders of infancy and childhood. The magazine will be issued quarterly.

Another Centennial.—The Vienna ophthalmologist, Prof. Karl Stellwag von Carion, known best by his sign in exophthalmic goiter, was born early in 1823. His "Manual of Ophthalmology," 1862, has been translated into several languages.

Afghanistan Invites German Physicians.—The *Münchener medizinische Wochenschrift* states that the government of Afghanistan is offering inducements for German physicians to settle in Afghanistan. Ten are wanted at once in the army, hospital and contract practice or private practice. The Leipzig League is in charge of the matter.

Artificial Limbs for Ex-Service Men in Roumania.—The minister of war of Roumania and the board of public hygiene have issued a proclamation to the war cripples of Roumania irrespective of nationality stating that those possessing worn-out or useless artificial limbs should appear at the nearest military hospital, where measurements will be taken and suitable limbs supplied. Free railway transport and free board in hospital will be provided where necessary.

Foreign Congresses.—The sixth annual meeting of the Australasian Association for the Advancement of Science was held at the Victoria University College, Wellington, New Zealand, January 9-10.——The annual congress of the Royal Institute of Public Health will be held in Scarborough, England, May 16-21, under the presidency of Lord Riddell.——The next annual congress of the Ophthalmological Society of the United Kingdom will be held in London, April 26-28, under the presidency of Dr. A. Maitland Ramsay.

Rockefeller Foundation Aids German Scientific Research.—The *Klinische Wochenschrift* states that Dr. H. Poll is the secretary of the committee in charge of the $50,000 which the Rockefeller Foundation has agreed to give annually for a number of years to aid scientific research. The money is to be used to provide means for scientific research which otherwise could not be carried out. The members of the committee are Professors Matthes, von Frey, Versé and Willstädter, and a representative of the Rockefeller Foundation.

Expeditionary Research Association.—At a meeting, January 3, in London, held under the presidency of Sir Kenneth D. MacKenzie, it was decided to form a scientific expeditionary research association for the purpose of facilitating and promoting scientific research by means of expeditions to all parts of the world. There will be an advisory council composed of members of the councils of all the scientific bodies interested in or affiliated with the association. It was announced that a research expedition to the South Pacific Ocean would be organized in the summer, covering a period of about ten months, at a cost of approximately £45,000 ($203,000).

Medical News from China.—A special commissioner, sent by the League of Nations, will go to the Far East to make an investigation of infectious and contagious diseases. Dr. Wu Lien-teh has been selected by the ministry of the interior of China to accompany the commissioner.——During the recent hostilities in China, the hospitals were handicapped by lack of roentgen-ray equipment. The Peking Union Medical College and the Shantung Christian University School of Medicine, Tsinanfu, sent operating and roentgen-ray units to aid local hospitals. General Wu, in gratitude, purchased a complete roentgen-ray outfit and presented it to the Mission Hospital at Paotingfu, and General Feng followed this example at K'aifengfu.——The Chinese churches recently organized a public movement to abolish licensed prostitution.

Venereal Disease in New Zealand.—The report of the committee of the New Zealand Board of Health, appointed to investigate venereal diseases in the dominion, has recently been issued. The most important finding was the very general ignorance among the public on the subject of venereal disease. It was estimated that one person in every 428 of the population of the dominion is being treated by registered medical practitioners for venereal diseases, or its after-effects. Dr. J. F. S. Hay, inspector general of the mental hospitals of New Zealand computes the number of persons now in the country who have or have had syphilis to be 33,000, or one in every thirty-eight of the population. Among the recommendations proposed were (1) that persons intending to marry should make an affidavit as to their freedom from communicable disease; (2) that a provision of the Queensland Act be adopted making venereal disease a ground for annulling a marriage contract, and (3) that a law be passed, compelling persons suffering from venereal disease to take treatment or be segregated.

International Health Course.—The Health Organization of the League of Nations, with the assistance of the Rockefeller Foundation, has commenced the practice of interchange of public health personnel (THE JOURNAL, February 17, p. 488). The first interchange of public health personnel was held in Belgium. Plans for the second interchange, which is to be held in England, were outlined in the *Lancet*, February 10. At the request of the ministry of health, arrangements are being made by the Society of Medical Officers of Health, which has appointed a special committee for this purpose. The party will consist of twenty-five persons, drawn from fourteen countries: Austria, Belgium, Czechoslovakia, Denmark, Finland, France, Hungary, Italy, Norway, Poland, Roumania, Russia, Serbia and Sweden. The officers will make their headquarters at the offices of the society, 1 Upper Montague Street, London. The first week will be spent in London. At the end of the week, the party will divide into groups of four or five persons, for study of health administration. The areas chosen, with the officers responsible for conducting the course follow: Birmingham and Warwickshire, Prof. John Robertson; Bradford and York, Dr. J. J. Buchan; Glasgow and Lanarkshire, Dr. A. K. Chalmers; Liverpool and Lancashire, Prof. E. W. Hope; Manchester and Cheshire, Dr. Veitch Clark, and Newcastle and Durham County, Prof. Harold Kerr. The groups will remain in the areas to which they are assigned till March 28. They will reassemble in London, April 3, and, until April 6, will study port sanitary administration. April 11, the international representatives, with five British medical officers, will depart for Austria, where a similar course will follow before the officers return to their respective countries.

Personal.—Mr. N. Gist Gee, for twenty years professor of biology at Soochow University, China, has been appointed adviser on premedical education to the China Medical Board of the Rockefeller Foundation of New York. He will make a study of the teaching of chemistry, physics and biology at colleges in China.——The *Medizinische Klinik* states that Professor Meyerhof, the physiologist of Kiel has been invited by the secretary of the Rockefeller Foundation to deliver a series of lectures at New York, Boston and Baltimore, and has accepted. He spoke in Cambridge last year on his research on cell respiration and muscular energetics.——The friends of Prof. M. Letulle of Paris, one of the editors of the *Presse médicale*, are collecting a fund to present him with an engraved plate on the occasion of his promotion in the Légion d'honneur. Each person subscribing at least 60 francs will be presented with a replica of the plate. M. P. Masson, 120 boulevard Saint-Germain, Paris, is the treasurer of the fund. The list of Letulle's works on internal medicine is a long one.——Prof. J. Hirschberg delivered an address recently, at a special meeting of the Berlin Medical Society, on "The Greek Canon of Ophthalmology." It demonstrated anew his wonderful familiarity with the classics and with this oldest work on ophthalmology, and its influence on Arabic literature and on the centuries that followed. Hirschberg is now 79.——The seventy-fifth birthday of Prof. James Israel of Berlin was celebrated by his friends recently with considerable ceremony. The congratulations of the German Surgical Society were presented by Bier; of the Berlin Surgical Society, by Körte; of the Berlin Medical Society, by Kraus; of the German Urologic Society and the Berlin Urologic Society, by Posner, and von Lichtenberg presented Israel with a special number of the *Zeitschrift für chirurgische Urologie*, published in his honor.——The *Klinische Wochenschrift* states that the former surgeon-general of the Russian guards, Dr. von Untersberger, aged 75, is living retired at Dorpat, having lost everything by the revolution. He was awarded a gold medal at the Tuberculosis Congress at Washington.

Deaths in Other Countries

Dr. **Alfred E. Harris,** for nineteen years medical officer of health for Islington, London.——Dr. **Alfredo Ferrán Funalleda** of Ponce, Porto Rico.——Dr. **Muñoz Urra** of Talavera, known for his research on the histology of the eye.——Mme. **Francq-Celse,** who practiced at Boulogne-sur-Mer.——Dr. **Antonio Molina de St. Remy,** an otolaryngologist, who settled in Porto Rico in 1898, but lately moved to Santo Domingo.

CORRECTION

Dr. Scott Did Not Resign from Veterans' Bureau.—In THE JOURNAL, February 24, under Government Services, it was stated that Dr. T. Hugh Scott, formerly executive officer of the U. S. Veterans' Bureau, had resigned. This was incorrect. Dr. Scott has not resigned, but was recently transferred to the U. S. Veterans' Bureau Hospital at Muskogee, Okla., as officer in charge.

Government Services

Colonel Forbes in Message on Veterans' Bureau

On his retirement as director of the U. S. Veterans' Bureau, Col. C. R. Forbes declared that the greatest need of the bureau was the establishment of a board of consultants consisting of four or five specialists to be paid not less than $20,000 a year to care for the 25,851 hospital patients under treatment in government institutions. Colonel Forbes recommended that this board of consultants consist of one neuropsychiatric, one tuberculosis, one general medical and surgical, one eye, ear, nose and throat, and one orthopedic expert. An educational director was also suggested to supplement these members of the proposed board. Physicians considered by Colonel Forbes of the type necessary to serve the Veterans' Bureau and help solve the difficult problems were: neuropsychiatric: Dr. W. F. Lorenz of the Wisconsin Psychiatric Institute; Dr. D. W. Salmon, formerly director of the National Society of Mental Hygiene; Dr. W. A. White, head of St. Elizabeth's Hospital; tuberculosis: Dr. E. R. Baldwin, president of the Trudeau Sanatorium of New York; Dr. S. M. Rinehart of the Veterans' Bureau; Dr. Frank Billings of Chicago; general medical and surgical: Dr. Charles Mayo of Rochester, Minn.; Admiral E. R. Stitt, Surgeon-General of the Navy; Dr. L. B. Rogers, assistant director of the Veterans' Bureau, in charge of the medical division.

Colonel Forbes asserted that mental cases were increasing among disabled soldiers, the figure at present standing at 9,243. The bureau is caring for 10,915 tuberculosis patients and 5,693 general medical patients, according to the latest figures.

Commanders of Navy Hospitals Change

Several changes have been made in the command of U. S. Navy hospitals. Capt. N. J. Blackwood has been transferred from the command of the hospital at Boston to New York; Capt. James F. Leys, from the command of the hospital at Newport to Boston, and Capt. H. T. Lowndes from the command of the hospital at New York to the hospital at Washington, D. C.

Senate Committee to Investigate Veterans' Bureau

The Senate passed the Reed resolution authorizing a committee of three senators "to investigate leases and contracts executed by the U. S. Veterans' Bureau or the Treasury Department for vocational schools and hospitals, and for the purchase, rentals and sales of real estate and supplies used directly or indirectly for the benefit of the veterans of the World War." The preamble of the resolution states that it is claimed that an unnecessarily large proportion of the appropriations made by Congress for the relief of veterans is being improperly consumed in overhead expense and duplication of duties, and in the employment of an unnecessarily large number of agents, physicians, instructors and other persons. The investigating committee will consist of Senators D. A. Reed (Pa.), chairman, D. I. Walsh (Mass.), and T. L. Oddie (Nev.). Senator Reed informed the President that the committee would organize at once. A statement was issued by the new director of the Veterans' Bureau, Brig.-Gen. Frank T. Hines, as follows: "The books and records of the U. S. Veterans' Bureau in Washington and in the field will be made available for Senator Reed's committee at all times. Full cooperation in every way will be given, and it is to be hoped that the inquiry will be beneficial not only to the veterans, but also to the bureau itself."

International Cooperation on Health Matters

Assistant Surg.-Gen. J. D. Long has been detailed, on request of the state department, to accompany the delegates to the fifth International Conference of American States, to be held at Santiago, Chile, March 25, 1923. Dr. Long, in addition to his duties in charge of the division of foreign quarantine of the public health service, is assistant to the director of the international sanitary bureau of the Pan-American Union. After the completion of the International Conference of American States at Santiago, it is expected that Dr. Long will visit various countries of South America to establish cordial relations with the health authorities of the countries visited. There are many international sanitary problems constantly present in the countries of South America due to such diseases as plague, smallpox, yellow fever and leprosy, and control of these diseases may best be had through the international cooperation and mutual understanding that will follow such visits. Assistant Surgeon-General Long has been selected for this detail because of his experience in the Philippine Islands and the Orient for ten years, during which time he was director of health and chief quarantine officer of the Philippine Islands.

Vacancies in Navy Medical Corps

Arrangements are being made to fill the thirty-three vacancies in the Medical Corps of the Navy. The examinations will be conducted by subsidiary boards at the naval station nearest the candidate's home, and the papers given a final mark by the central board of the department at Washington.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 10, 1923.

Victor Horsley Memorial Lecture

In 1920, a committee was formed to commemorate Sir Victor Horsley's services to science. It may be remembered that he died while on service with the army in Mesopotamia, in 1916. Subscriptions amounting to $5,000 were received from all over the world. The committee, over which Sir Charles Ballance presides, and of which Sir Frederick Mott is treasurer, resolved that the money should be invested in the name of a board of trustees, who should triennally appoint some one to deliver a lecture in London under the title of the Victor Horsley Memorial Lecture. No limitation is placed as to the country or profession from which the lecturer shall be appointed, or as to the subject of the lecture. Sir Edward Sharpey Schafer, professor of physiology in the University of Edinburgh, has accepted the invitation of the trustees to deliver the first lecture, which will probably be given in the autumn.

Zinc Poisoning

An outbreak of zinc poisoning is rare. One occurring recently among the inmates of an institution near London makes evident the danger that may arise from the use of galvanized iron vessels in cooking. About 400 persons were served at tea with hot stewed apples. Within a few minutes, more than half of them complained of dizziness, nausea or sickness, and tightness in the throat. There were also some cases of diarrhea. The medical officer at once administered a bismuth and chalk mixture, and within a short time most of the sufferers recovered. Only ten were seriously ill, and all were sufficiently well next day to carry on their ordinary work. The apples had been freshly gathered, and stewed in large galvanized iron "skeps," which were placed in iron steamers. The skeps were used because on a previous occasion the apples had turned black when placed directly in the steamer. Analysis of some of the apples showed that they contained 7 grains of zinc, in the form of zinc oxid, in a pound. This is equivalent to 20 grains of hydrated zinc sulphate to a pound. The dose given in the British pharmacopeia is from 1 to 3 grains (0.065 to 0.195 gm.), and the emetic dose, from 10 to 30 grains (0.65 to 1.95 gm.). Each person who ate the stew may be assumed to have taken about 20 grains (1.3 gm.) of the sulphate. Its presence in the apples can be explained by the solvent action of vegetable

acids on zinc. Hence, galvanized iron vessels are not sold for cooking, and in private houses never appear to be used for this purpose. But managers of public institutions seem to require instruction as to the risk.

Vital Statistics of 1921

The report of the registrar general for 1921, for England and Wales, which has just been published, shows that the standardized death rate was 11.5 per thousand, the lowest recorded. In all age groups up to 65, the rates are lower than ever before. The figures show the progressive saving of life in this country:

Decade	Death Rate
1841–1850	22.4 per thousand
1871–1880	21.4 per thousand
1901–1910	15.4 per thousand

Thus, the present death rate is only just over half that of the period 1841-1850. This table gives the principal causes of death:

DEATHS IN 1921

Cause	Number	Per Cent. of Total in Round Figures
Total	458,629	..
Heart disease	53,710	12
Cancer	46,022	10
Tuberculosis	42,678	9
Pneumonia	34,708	8
Bronchitis	33,684	7
Influenza	8,995	..

The smallness of the influenza figure compared with previous years is noteworthy:

INFLUENZA DEATHS

Year	Number
1918	112,329
1919	44,801
1920	10,665
1921	8,995

In 1921, the tuberculosis, bronchitis, and pneumonia rates were also exceptionally low. On the other hand, the cancer rate showed a slight increase, and was higher than in any year since 1918. Infant mortality was 83 per thousand births, a rate second only to that of 1920. When this rate is compared with that of 153, in decade 1841-1850, the great improvement is evident.

A New Element Isolated in London

A new element, called hafnium, has been isolated in London by Dr. Alexander Scott. He showed specimens of the oxid, a cinnamon colored powder, at a meeting of the Chemical Society. A short time ago, two young chemists, Coster and Hevesy, working in the laboratory of Professor Bohr at Copenhagen, announced that, by roentgen-ray spectroscopy, they had found an unknown element occupying position 72 in the table of the elements, as arranged by Moseley. French chemists had already assigned this number to a supposed rare earth element, which they called celtium; but the Danish chemists presented reasons for doubting their results. The element to which they gave the name of hafnium they believed to be a metal in the group of titanium and zirconium. They inferred its presence to 1 per cent. in a Norwegian zirconium mineral, but had not isolated it.

In 1913, Dr. Scott received for analysis from New Zealand samples of black sand, from which he extracted a cream colored sand containing 75 per cent. magnetic oxid of iron and 25 per cent. titanium oxid. In further tests on the titanium oxid, he always found small quantities of a highly refractory residue. He continued to collect these, labeling them "new oxid," but until a few weeks ago, he could not pursue his investigations. Knowing from the similarity of the compounds it made with potassium and fluorin to those of titanium and zirconium that it was a likely candidate for position 72 in the atomic table of the elements, he began to work as soon as he heard of the Danish discovery. He found the atomic weight to be approximately 180 and the chemical characters to be those which roentgen-ray spectroscopy would assign to hafnium. The black sand deposit of New Zealand is said to be more than 7 miles long and of unknown depth, so that if hafnium has a commercial value it can be turned out in bulk. From its analogies to zirconium and titanium, it may be of value in making incandescent mantles. Dr. Scott is a director of scientific research at the British Museum, and is well known for his investigations on the chemical deterioration of museum objects and the methods of restoring them. He is constantly consulted as to the preservation of the relics from the tomb of Tutankhamen. His discovery is the most striking chemical event in this country since Ramsay's isolation of helium.

Crippled Children of London

A careful survey made of London's crippled children has been embodied in a report by Mr. Elmslie, orthopedic surgeon to St. Bartholomew's Hospital, to Dr. Hamer, health officer for London. Acute poliomyelitis has now become the most important cause of crippling, tuberculosis having fallen to the second place.

CAUSES OF CRIPPLING

Infantile paralysis	961
Tuberculous disease	732
Congenital deformities	180
Other deformities	421
	2,294

Infantile paralysis is mainly a disease of the first two years of life, as the analysis of 559 cases shows:

INFANT MORTALITY

Age at onset	1	2	3	4	5	6	7	7-10
Number of cases	211	168	87	50	26	3	7	7

Mr. Elmslie finds that the treatment of acute poliomyelitis in London is very unsatisfactory and that a new method is called for. He emphasizes the importance of early diagnosis and treatment. His criticisms of existing methods are severe in contrast to the favorable opinion expressed as to the treatment of tuberculosis. Tuberculosis as a cause of crippling occurs later in life than poliomyelitis:

TUBERCULOSIS

Age at onset	1	2	3	4	5	6	7	7-10
Number of cases	31	73	100	68	88	48	42	55

The report does not treat of the causes of these diseases, which are regarded as a problem of preventive medicine.

Campaign Against Venereal Diseases

The seventh annual report of the National Council for Combating Venereal Diseases, which has just been published, brings the story of this movement up to June, 1922. One of the great difficulties in the control of venereal diseases is to secure continuous treatment. The figures of attendance at clinics are: 1918, 46,000; 1919, 82,000; 1920; 85,000; 1921, 67,000. These figures have been interpreted as showing that at first the clinics were new and less numerous, and that at

last a definite drop took place in the incidence of the diseases. But many patients did not continue under treatment until cured. It has been estimated that 60,000 patients disappeared in the years 1919-1920 from the records of the clinics before they ceased to be a danger to others as well as to themselves. An obvious remedy would be compulsory treatment, and arguments for it, drawn from countries in which it has been tried, are given in the report. But compulsion is repugnant to the ideas of liberty that prevail in this country. Still there is hope that some limited form, for those who discontinue treatment, may be introduced by the ministry of health.

Centenary of Pasteur in London

In celebration of the centenary of the birth of Pasteur, a lecture was given in the rooms of the Royal Society, under the auspices of the Alliance française, by Dr. Pasteur Vallery-Radot, a grandson of Pasteur and a distinguished pathologist and physician of the Paris hospitals. Sir Charles Sherrington, president of the Royal Society, who was in the chair, said that Pasteur was not only a great Frenchman and a great man of science, but also a great benefactor to the human race and to animal kind, both intellectually and practically. The lecturer has under preparation the complete annotated works of his illustrious grandfather. In his address, Dr. Pasteur Vallery-Radot said that nothing could be dearer to Pasteur than the knowledge that England, the land of Jenner and Lister, and the home of some of his greatest friends and warmest partisans, was paying homage to his memory. At the age of 25, Pasteur was already a great scientist. His study of crystals led him to discoveries in fermentation and the question of spontaneous generation. Pasteur was insistent on results, and by showing the various industries the benefit of his studies, gave practical help in the production of wine, beer, milk, vinegar and bread. His well known discoveries of the causes of infectious diseases followed. His work, by its logical linking and its incalculable consequences, was one of the most wonderful products of man's genius; he had an extraordinary imagination, but he tempered it by the most strict experimentation. His ideal was to see humanity led to peace by the aid of science.

Australian Institute of Tropical Medicine

The Australian Institute of Tropical Medicine was opened at Townsville in 1913, in the part of the great continent that lies within the tropics. Although Australia is relatively free from tropical disease, it was felt that, when the north became more populated, malaria, yellow fever, amebiasis and other exotic diseases were likely to be imported, as the trade routes bring it into contact with countries in which these diseases are rife. The importance of training Australian physicians in tropical medicine was therefore realized. The project of making the institute a postgraduate school for tropical hygiene failed, as few graduates availed themselves of the facilities offered. But the other function of the institute—to conduct research into the tropical diseases—remained. Dr. Anton Breinl, a pathologist well known for his work on tropical diseases in England, was appointed the first director, with three assistants. Some excellent work was done by them. The "White Australia policy," which is as important in Australian politics as the Monroe doctrine is in America, raised the question, Can the white man and woman live and maintain health in tropical Australia? Dr. Breinl and his collaborators made some valuable researches whose results answered this question affirmatively. Dr. Breinl resigned in 1921, and the institute became dormant. But with the creation of the commonwealth department of health, the institute was reconstructed. Its activities include the esablishment of laboratories to render assistance to physcians in lacteriologic, protozoological and biologic work, and the organization of a service to deal with tropical diseases in Australia and her dependencies. Work on hookworm disease has been done with the assistance of the Rockefeller Foundation. The whole of Australia and her dependencies have been surveyed, and the distribution of hookworm disease has been determined. It is proposed to establish permanent measures of control and thus to eradicate the disease. By arrangement with the Rockefeller Foundation, a section of the work will be carried out with the collaboration of the Australian Institute of Tropical Medicine. Also, an inquiry into the incidence of malaria and filariasis has been begun. The staff is being reappointed, and Dr. R. W. Cliento, a recent graduate of Adelaide University, has been appointed director. He has been sent on a tour to Java, Ceylon, India, Italy, England, the United States and the Panama zone to study the methods of control of tropical diseases. Arrangements have been made with the Universities of Melbourne and Sidney for the instruction in tropical medicine required for a diploma.

PARIS

(From Our Regular Correspondent)

Feb. 9, 1923.

Measles as Modified by Preventive Injections of Convalescents' Serum

The method of prophylaxis of measles by the injection of the serum of convalescents from this disease, which has been recommended, since 1916, by C. Nicolle and E. Conseil, and which has been widely experimented with in America and in Germany, has been the subject of a series of studies in France (P. L. Marie, Nobécourt and Paraf, Cheinisse). However, at a recent meeting of the Société médicale des hôpitaux de Paris, Drs. R. Debré and Ravina held up against the method the transitory character of the immunity it confers. By a previous injection of convalescents' serum, they have proposed to secure an attenuated type of measles in children who become exposed rather than to suppress the disease entirely. To accomplish such a result, a preventive injection at the end of the period of incubation, between the seventh and the tenth day, should be given the patient. Under these conditions, a very peculiar type of measles is observed. The incubation period is sometimes prolonged and the period of invasion is practically suppressed; in some cases it expresses itself by a slight rise of temperature, without any catarrhal symptoms; Koplik's spots have not been observed. In such cases, the eruption is sometimes discrete, sometimes more or less confluent, but not associated with catarrhal manifestations. The fever is mild or very light; the general condition remains entirely satisfactory throughout the course of the disease, which is very short. There are no complications. There is no tuberculin anergy. The serum of patients convalescent from this modified type of measles possesses the same preventive properties as the serum of those convalescent from ordinary measles. From these facts it would seem that children treated by this method have acquired, in a simple manner and without danger, a satisfactory immunity to measles.

Intoxications Resulting from the Manufacture of Artificial Pearls

Dr. André Léri reports observing in two women, engaged in the manufacture of artificial pearls, a peculiar form of polyneuritis, characterized by a paralysis affecting chiefly the interosseal muscles of the feet and hands, and, to a lesser degree, the extensor muscles of the feet and the flexor muscles of the hands; an anesthesia in the region of the interosseal branches of the extremities; abolition of all the tendon reflexes; paralysis of the soft palate, associated with suppression of the pharyngeal reflex, and paralysis of the orbicularis oculi and the orbicularis oris. These two women filtered the

nacreous varnish by hand, and also dipped the "pearls" in this varnish, which contained a high percentage of tetrachlorethane, a very volatile and toxic chlorin compound of carbon. These findings caused Léri to look into the matter more carefully; he found that all the women engaged in the dipping or the mounting process presented quite serious manifestations affecting the peripheral nervous system: dilatation of the pupils or unequal size of the pupils with a weakened light reflex, paralysis of the extensors of the fingers, paralysis of the soft palate, with diminution or disappearance of the pharyngeal reflex, and frequently abolition of the tendon reflexes. Some of these women (those engaged in the mounting process, for example) merely breathed an atmosphere charged with the vapors of tetrachlorethane, without coming in direct contact with this substance. It was very evident, therefore, that intoxication occurred by way of the respiratory passages.

His attention having been once directed to the subject, Léri did not take long to become convinced of the great frequency, hitherto unsuspected, of intoxications through the industrial use of tetrachlorethane, which is used, not only in the manufacture of artificial pearls, but also as a solvent in a number of industries. Strict hygienic measures should therefore be employed in factories in which tetrachlorethane is used, and particularly in the artificial pearl industry. Braying of the nacreous varnish should not be done by hand, but a mechanical process should be substituted. The dipping vats containing the nacreous varnish should be kept closed as much as possible, and the toxic vapors as they rise should be sucked away from below. Only the employees absolutely needed should be allowed to remain, for any length of time, in the contaminated atmosphere. The employees should receive a medical examination, from time to time, and those showing the first signs of intoxication should be eliminated without delay; the abolition of reflexes may be regarded as an alarm signal. In this manner, grave intoxications; for instance, certain types of commonly fatal icterus such as have been observed, can doubtless be prevented.

Seventy-Fifth Anniversary of Society of Biology

May 26, 1923, the Société de biologie of Paris will celebrate the seventy-fifth anniversary of its foundation. The affiliated societies will also take part in the ceremonies. These are located at Bordeaux, Marseilles, Nancy, Petrograd, Lille, Barcelona, Strasbourg, Lyons, Buenos Aires, Lisbon, Athens, Bukarest, Cluj and Jassy, including the societies of Denmark, Sweden, Lithuania and Belgium. The Société de biologie and its affiliated societies will meet in plenary assembly, on which occasion three questions will be discussed: Generation and Fecundation, Dr. A. Brachet; Physiologic Action of Potassium and Calcium, Dr. H. Zwaardemaker, and the Problem of Immunity in Invertebrates, Dr. J. Cantacuzène.

Death of Dr. G. Bardet

Dr. G. Bardet, secretary of the Institute of Hydrology in Paris and formerly president of the Société de thérapeutique, has died at the age of 71. He was for many years chief editor of the *Bulletin général de thérapeutique.*

Medical Expeditions

Those who took part in the fifteenth and sixteenth medical expeditions were invited recently to a reunion held in the Laboratoire de thérapeutique of the Faculté de médicine. Each guest was presented with a beautiful plaquette in memory of the occasion. Many lantern slides of climatic stations and mineral springs visited on these two expeditions were shown at the meeting.

Since the war, these expeditions, which were formerly directed by the late Dean Landouzy, have been under the scientific direction of Prof. P. Carnot, who succeeded Landouzy to the chair of therapeutics, and of Assistant Prof. F. Rathery. Dr. Gerst has charge of the material equipment for the expeditions. The next expedition will include the climatic stations and the mineral spring resorts of the Jura, Savoy and Dauphiné. Confrères from other countries, who may wish to join the expedition, will be heartily welcome.

VIENNA

(From Our Regular Correspondent)

Jan. 26, 1923.

Cocainism in Vienna

The number of victims of the cocain habit in this city has suddenly increased. The police are attempting to stop the illicit trade in this drug, which is new in our country, having been introduced by visitors. Our laws prohibit the dispensing of cocain by any chemist or apothecary unless on a regular prescription from a duly qualified and registered medical practitioner, and then only in solution, except when sold to hospitals or medical men. Thus it is clear that the quantities required for addicts can be obtained only by smuggling. Although no great harm has yet been done, the public is aroused to the possible danger.

Honorary Titles Relinquished

All medical members of the University of Vienna have given up the honorary titles conferred on them by the former or the present governments, such as councilor of the court and councilor of the emperor, retaining only those titles that have been obtained from the university by scientific work and teaching, such as professor or privat-dozent (or lecturer). These honorary titles were misleading, as they were looked on as evidence of special knowledge, while in fact they were only "ornaments" conferred for prolonged public service, or as a substitute for higher salaries. There was for many years a craze among German-speaking people for titles. The general medical practitioners had often demanded that physicians forego such titles, but the mentality of middle Europe was not yet ready for such a change in public life.

Congress on "Logopedy" Proposed

The Vienna phonetic society, which has done a great deal to promote the study of the physiology and pathology of the human voice, is endeavoring to arrange a "logopedic" convention in this city. Invitations to meet this summer have been sent to the leading men in Europe engaged in this kind of research, and if the acceptances are numerous enough, the convention will take place. It is intended to hold a symposium on aphasia, phonetic problems in adolescents and peripheral disturbances of the speech. Otolaryngologists and rhinologists will also be invited.

Charts on Mortality and Births in Vienna

In a paper on vital statistics, which Dr. Hecke of the Board of Public Health presented before the Sociologic Society of this city, charts were exhibited which show that since 1919 a small but significant increase of births has taken place. This, however, cannot yet compensate for the increased loss of life and the decrease in births during the war years. About the same ratio between births and deaths existed in 1921 as in 1915; the exact figures for 1922 are not yet available, but the very low figures of 1918 are already greatly exceeded. While in 1911 the total mortality amounted to 33,664, the birth rate stood at 41,030. In the next year, both figures dropped in nearly parallel lines, the deaths numbering 32,161, the births 39,801. In 1913, the deaths increased a little, numbering 32,319, and the births diminished to 37,367. Similar conditions prevailed in 1914, when the deaths rose to 33,268, and the births dropped to 36,378. The mortality figures went up by leaps and bounds in 1918 and 1919, so that the curve

on the chart resembles a human arm outstretched in despair, while the birth curve falls in a steep decline.

In 1917, only 20,688 children were born, while 46,131 persons died from influenza and other diseases. The climax was reached in 1918, when there were 19,257 births and 57,497 deaths. In 1919, the number of births rose to 29,218; the deaths dropped to 40,922. This satisfactory trend continued in the next year with 27,821 births and 34,197 deaths; in 1921, there was a slight excess of births over deaths: 28,798 against 28,297, respectively.

Scientific Research in Austria in 1922

In a short report to the government, which demonstrated the meagerness of the regular appropriations to the scientific research institutes, Professors Becke and Rademacher asked for larger appropriations, and enumerated the most important investigations conducted last year in this country. Apart from the publications dealing with the geographic and ethnographic researches in the Balkans in 1915-1918, when our armies occupied these countries, the results of which were made known in 1922, one of the most important papers was that by Dr. Schedler, who made geomagnetic surveys in thirty different places and found marked differences and changes from the values heretofore accepted.

The Vienna Radium Institute, a private concern, has done excellent work in the investigation of radioactive substances. It has been shown that the age of certain mineral deposits can be estimated according to the proportion of transformation or decay of the radioactive substances contained in them. While the uranium-pitchblende of Bohemia is about 200 million years old, in Norway there are minerals at least twice as old, and in Ceylon the layers of thorianite have been found to be at least 500 million years old.

A tremendous amount of work is still going on in the biologic institute (Vienna). Here the problems of transplantation have attracted the attention of a number of gifted investigators. The pupils of Przibram study especially the physiology of transplanted eyes, hearts and legs. Koppanyi has succeeded in transplanting eyes in rats, and these eyes seem to be functioning. At a recent meeting of the Vienna Ophthalmologic Society, his experiments were vehemently attacked by the oculists, but just as vehemently defended by the physiologists. Dr. Weiss transplanted entire limbs in amphibia, exchanging, for instance, arms and legs, and demonstrated that these transplanted limbs functioned normally after a few days. In a group of these animals, he could even transplant whole hearts into the peritoneal cavity. These transplanted hearts obtained an organic union with the new host, the animal thus having two hearts.

In the chemical laboratories of the university, important researches on the catalytic effects of copper and of the methyl-groups of methylated benezene compounds are in progress. In the physical institute, studies on colors and their differentiation are conducted by Dr. Duschek-Frankfurt. A prehistoric cave, discovered in the Styrian Alps near Mixnitz, gave opportunity for the study of animals and plants of diluvial times, while the results of botanic researches in the Far East and in the African Sudan, begun by Austrians before the war, have been published recently.

All these important contributions to science have been made in spite of an appalling lack of funds, indicating what might be done if the scientific spirit were not subdued.

Graduate Work for Vienna Practitioners

The progress of medicine has made it necessary for practitioners to keep in touch with the latest achievements, but it is not an easy matter to attend the so-called postgraduate courses organized by the university. These courses last a fortnight, are conducted through the day and are not therefore accessible to the average practitioner, who simply cannot spare a fortnight four times a year for this purpose. The Wiener medicinisches doktoren Kollegium (a private medical corporation) has instituted the Seminar Abende (instruction evenings), which are open to all medical men free of charge. Any physician in Vienna may inform the secretary of the kollegium that he desires instruction on a certain point or subject. These notices are collected. Eminent lecturers then take charge of the queries and summarize them under dermatology, pathology, gynecology or other subjects. Every Monday at 6:30 p. m., one or two of the lecturers speak on the subject, and, as far as possible, answer the questions submitted a week before. Meanwhile, the lecturer has time to look up the latest references.

Discussion is, as a rule, encouraged. The new departure has been given a warm reception by the profession, and is considered a great success. Practitioners from Germany, the provinces and foreign countries have asked permission to attend these evenings, so as to be able to introduce new methods in their own cities or countries. The university has approved these "evenings," and one of the largest classrooms has been placed at the disposal of the kollegium for a weekly lecture. Eminent specialists are now eager to enlist as lecturers and referees, and the kollegium has only to select the man best suited for presenting the subject of the evening.

The Problem of Alcohol in Teaching

In a paper presented before the Austrian Society for Hygiene, Reichel discussed the difficulties of presenting the alcohol problem in schools: how to impress on adolescents the detrimental effects of alcohol. A large percentage of the population is of the opinion that moderate consumption of alcohol is not detrimental. It is noticeable that total abstainers not infrequently are vegetarians, or faddists of another kind, and thus cannot be regarded as commendable examples. Poets of all nations have always glorified wine as an excellent beverage, and in religious acts of several creeds wine plays an important part. Therefore, youth must be taught that self control is the principal means of insuring a sound mind in a sound body.

The lecturers do not believe it advisable, in the case of young persons, to demonstrate the harmful effects of alcohol by pathologic specimens. It is much more effective to prove to them that drinkers are more subject to disease and illness than abstainers. Statistics of insurance societies; mortality statistics of alcohol-consuming classes (waiters, barmen) and of moderate drinkers, and of drinking races (French, German, Russian) should be shown, to emphasize that the person who uses alcohol is more likely to be sick than persons who do not use it. This methol appeals to the instinct of self-preservation.

Especial interest is evoked in the youthful minds by the experiments and observations on sportsmen. Durig has collected statistics of record holders among German athletes. The absolute superiority of total abstainers over even moderate drinkers is a revelation to young men, whose interest in sport is intense even in our countries. It is easy to convince them that mental health is inconsistent with bodily ill health. Reichel thinks that children should be taught to refuse even to taste alcohol. The supposed increase of mental activity under the influence of alcohol can easily be shown to be misleading. The figures on temporary mental derangements, even of lasting mental harm due to alcohol, can be easily traced. The statistics of hospitals for the insane offer excellent proof. It is important that the school physician himself set an example of total abstinence and that school boards appoint only teachers who are abstainers.

BERLIN

(From Our Regular Correspondent)

Feb. 10, 1923.

Effect of Economic Conditions on Hospitals

On account of the bad economic conditions, the private hospitals have begun to experience difficulties. In Berlin, at the present time, the cost of maintenance per patient in the public welfare hospitals amounts to more than 3,500 marks a day. The city contributes, however, only 1,980 marks and the health insurance societies only 1,500 marks per patient. Consequently, the total indebtedness of the municipal general hospitals has reached the sum of 4,200,000,000 marks, while the deficits of the forty private hospitals (denominational institutions, homes for the aged, etc.) amount to 100,000,000 marks. The municipal government will therefore be compelled to lend its aid, and it has been proposed that the price of gas be raised 5 per cent. for the benefit of municipal welfare institutions.

The Prussian Academy of Sciences

At the last two sessions of the Academy of Sciences, Prussia's most distinguished scientific body, Professor Beckmann spoke on the subject of protection to human life through improvement in nutrition. For his proper nourishment, man needs, chiefly, digestible carbohydrates and albuminous substances. The latter he derives mainly through the mediation of domesticated animals. It lies in the interest of man's nutrition, therefore, to provide our domesticated stock with plant foods that are as easily digestible as possible. For example, through maceration of straw by treating it with alkali hydroxid, carbohydrates may be made more digestible, and, by the application of leaching with water, lupine seeds may be detoxicated, so that their albuminous substances may be utilized to advantage for the feeding of stock. An increase in the digestibility of stock foods, or any other improvement in them that can be effected, immediately redounds to the benefit of human nutrition. Any conservation of foodstuffs is also of advantage to human nutrition. There are many experiments in progress in these fields of endeavor.

Professor Correns, the director of the Kaiser Wilhelm Institute for Biologic Research, located in Dahlem, a suburb of Berlin, delivered a lecture on the "Numerical Relationship of the Sexes." Whereas Süssmilch in 1741 referred in one of his works to "God's interposition" in the distribution of the sexes of mankind, modern science is endeavoring to acquire an influence over the determination of sex. Süssmilch sought to explain teleologically the fact that for every 100 girl births there were from 104 to 105 boy births by citing statistics to the effect that boys, during childhood, are subject to a greater mortality. However, the figures vary in different countries and are also subject to secular changes; wars, especially, affect the numerical relationship of the sexes. Internal or external conditions may change the relationship quite markedly; for instance, influences may be brought to bear on the sperm cells. Such influences may affect the numerical relationship in two ways: either one kind of sperm cell may be strengthened or weakened at the expense of the other, or the physiologic conditions under which they exist may be modified by the voluntary act of man. Up to the present time, however, science has not progressed very far in its experimental endeavors looking toward sex determination, so that "God's interposition" still holds, as a matter of fact.

The Institute for Roentgenologic Research

The Institute for Roentgenologic Research, which, since the death of Geheimrat Grunmach in 1919 has been lying fallow, as it were, is at last to have a new director. The selection of a new director for this neglected post has been delayed, owing to the fact that there has been a difference of opinion between the government and the university faculty as to the course that the institute should follow. While the government was inclined to put the administration of the institute in the hands of a roentgenologist, the faculty voiced the opinion that a physicist should be put at the head of affairs, on the ground that clinical roentgenology and other phases of radiotherapy were sufficiently well provided for in the various clinics, not only from the diagnostic but also from the therapeutic side. There was a need for the development of roentgen-ray research, and for that reason a physicist would seem to be indicated rather than a medical man. The deliberations on the subject have now been brought to a close, and the institute, which was formerly a laboratory for roentgen-ray examinations, has been changed into an institute for roentgenologic research, and a physicist, Prof. W. Friedrich, head of the Radiologic Institute of the Women's Hospital in Freiburg, has been appointed as director. At the same time, the position has been raised to the rank of a head professorship. Friedrich, working sometimes alone and sometimes in collaboration with Professor Gauss of Freiburg and the late Professor Krönig, has performed meritorious service in the field of roentgenologic research and in its practical application.

Personal

Prof. Dr. James Israel, Berlin surgeon, celebrated, February 2, in an enviable state of physical and mental health, his seventy-fifth birthday.

Hermann Hartmann, the founder of the Wirtschaftliche Organisation der Aerzte Deutschlands (Leipziger Verband), died at Leipzig, January 20, at the age of 59. Hartmann was a natural-born leader and a strong, self-reliant personality. At a time when physicians were helplessly exposed to the caprice and exploitation of the directors of the health insurance societies, Hartmann saw the value of organizing; thus he became, at the turning-point of the century, the first man in Germany to effect a union of professional men for economic purposes. By persistent, energetic effort he forced the medical profession to recognize the medical organization he had founded, and at last brought it about that this organization gained a powerful influence with the government and in parliament, and came to be regarded as possessing equal rights with the directors of the health insurance societies in matters pertaining to health insurance. He was later chosen as the representative of the medical profession on the Reichswirtschaftsrat (economic council). Establishment of the principle of free choice of physician was the method Hartmann employed to restore the liberties of the physicians in their struggle with the health insurance societies. The Hartmann League, as the economic organization of the medical profession has been called in his honor, has, through his efforts, been placed on such a solid foundation that what he has wrought will persist in spite of the death of the founder.

Marriages

PERCY J. CARROLL, major, M. C., U. S. Army, Jefferson Barracks, Mo., to Miss Helen Byrne of St. Louis, February 3.

JAMES M. MILLER, captain, M. C., U. S. Army, Fort Eustis, Va., to Miss Bessie E. V. Keil of Walhalla, S. C., February 3.

JOHN MAURICE HAYES, Decatur, Ill., to Miss Helen D. Hogan of Assumption, recently.

CARLE E. BENTLEY to Mrs. Katherine Oakman, both of Little Rock, Ark., February 10.

FRANKLIN W. SELLS, Osceola, Iowa, to Miss Clara L. Black of Los Angeles, January 3.

LONNIL WOODFIN GROVE to Miss Dorothy Haverty, both of Atlanta, Ga., January 19.

Deaths

Cyrus Lee Stevens ✠ Athens, Pa.; College of Physicians and Surgeons, Keokuk, Iowa, 1880; consulting surgeon at the Robert Packer Hospital, Sayre, where he died, February 19, aged 71, following a long illness. Dr. Stevens was born at Stevensville, Pa., in 1851. Following his graduation, he visited hospitals in New York, London and Paris and was appointed professor of obstetrics and surgery, Medical Department Central Turkey College, at Aintab, Turkey, where he remained for three years. Returning to the United States in 1884, he was appointed medical superintendent at the New York Post-Graduate School and Hospital. He served as member of the board of trustees, secretary and president of the Medical Society of the State of Pennsylvania; president and secretary of the Bradford County Medical Society; member of the board of health; the borough council, and editor of the *Pennsylvania Medical Journal*. Dr. Stevens was a member of the House of Delegates of the American Medical Association for six years, a member of the reference committee on amendments to the constitution and by-laws for three years, and chairman of the reference committee on credentials for one year. He was a member of the American Association for the Advancement of Science, and in 1907 was made a member of the Pennsylvania House of Representatives.

Sir Thomas George Roddick, Montreal, Canada; honorary president of the Medical Council of Canada; died, February 20, of arteriosclerosis, aged 76. Dr. Roddick graduated from McGill University Faculty of Medicine, Montreal, in 1868, and was appointed professor of surgery in 1890; dean of the medical faculty, 1901-1908, governor, 1908, and at the time of his death, emeritus professor of surgery. He had served as consulting surgeon at the Royal Victoria and the Montreal General hospitals, and was a member of the Canadian parliament from 1896 to 1904. Dr. Roddick was appointed first colonial president of the British Medical Association in 1896, and was knighted in 1914.

John Bernard McGee, Cleveland; Western Reserve University School of Medicine, 1878; at one time professor of therapeutics and secretary of the faculty, Cleveland College of Physicians and Surgeons, and associate professor of therapeutics at his alma mater; member of the Ohio State Medical Association, the American Association for the Advancement of Science, the American Anthropological Association, the Cleveland Medical Library Association, the Cleveland Clinical Club, and formerly president of the Cleveland Academy of Medicine; on the staff of St. Joseph's Orphan Asylum; aged 69; died, February 10, following a long illness.

Daniel Hughes Du Pree ✠ Athens, Ga.; Johns Hopkins University Medical Department, Baltimore, 1907; formerly assistant professor of clinical medicine at the University of Georgia Medical Department, Augusta; member of the American College of Physicians; served in the M. C., U. S. Army, during the World War, with the rank of captain; aged 39; died, February 22, of angina pectoris.

Charles William Franzoni ✠ Washington, D. C.; Medical Department of Columbian College, 1869; member of the Biological Association of Washington; formerly president of the Medical Society of the District of Columbia and for thirty-five years treasurer of the Washington Medical Society; Civil War veteran; aged 85; died, February 17, of bronchopneumonia.

Lem Walter Spriggs, San Francisco; College of Physicians and Surgeons of San Francisco, 1899; Jefferson Medical College of Philadelphia, 1904; formerly dean, and professor of abdominal surgery and gynecology at the College of Physicians and Surgeons of San Francisco; aged 51; died, February 16, of chronic myocarditis and angina pectoris.

Joseph Weinstein ✠ New York; University and Bellevue Hospital Medical College, 1899; member of the American Academy of Ophthalmology and Oto-Laryngology, and the Berlin Laryngological Society; on the staffs of the Sydenham, Beth David and Beth Israel hospitals, New York; aged 45; died recently, at Frankfort, Germany.

Stephan Alexander Hunter, Pittsburgh; Jefferson Medical College of Philadelphia, 1878; ordained Presbyterian ministry, 1877; served as a missionary in China, 1879-1891; author of "A Manual of Therapeutics and Pharmacy" and "An Analysis of the Book of Hebrews" (both in Chinese); aged 71; died, February 20, of senility.

Tunis C. Quick ✠ Buffalo; Medical Department of Columbian University, Washington, D. C., 1895; member of the Medical Society of Virginia; served in the M. C., U. S. Army, during the World War; surgeon in the U. S. Public Health Service at the time of his death; aged 52; died, February 21, of heart disease.

Herbert James Hall ✠ Marblehead, Mass.; Medical School of Harvard University, Boston, 1895; former president of the American Occupational Therapy Association; since 1912 medical director of the Devereux Mansion Sanatorium, where he died, February 19, aged 52, following a long illness.

Henry Albert Hutcheson ✠ Oaklandon, Ind.; Medical College of Indiana, Indianapolis, 1903; formerly associate in clinical surgery at Indiana University School of Medicine, Indianapolis; aged 49; died, February 15, at St. Vincent's Hospital, Indianapolis, following an appendectomy.

William Shannon ✠ New York; New York University Medical College, 1889; formerly clinical instructor of pediatrics at Cornell University Medical College; on the staffs of Willard Parker, Riverside, and Misericordia hospitals; aged 59; died, February 19, of pneumonia.

Enos John Hughes, Chicago; College of Physicians and Surgeons, Keokuk, Iowa, 1876; University of Michigan Medical School, Ann Arbor, 1886; for more than thirty years medical examiner for the Baltimore and Ohio Railroad; aged 65; died, March 2, of heart disease.

James John Dickinson, Pittsburgh; Jefferson Medical College of Philadelphia, 1913; member of the Indiana State Medical Association; served in the M. C., U. S. Army, during the World War, with the rank of captain; aged 35; died, February 16, of pneumonia.

Ransom J. Chase, Springfield, Colo.; Hahnemann Medical College and Hospital of Chicago, 1903; served in the M. C., U. S. Army, during the World War; served with the American Red Cross in Russia for four years; aged 44; died, February 3, of pneumonia.

Eugene Francis Daum, Chicago; Northwestern University Medical School, Chicago, 1900; member of the Illinois State Medical Society; served in the M. C., U. S. Army, during the World War; aged 46, died, March 1, of acute endocarditis following influenza.

George Washington Faller ✠ Oyster Bay, N. Y.; New York University Medical College, New York, 1878; member of the New York Academy of Medicine; formerly on the staff of the Nassau Hospital, Mineola; aged 68; died, February 19, of heart disease.

George Woodruff Johnston, Washington, D. C.; University of Pennsylvania School of Medicine, Philadelphia, 1882; formerly on the staff of the Emergency Hospital; aged 64; died, February 20, of heart disease while delivering an address.

Paul Tudor Jones, Columbus, Ga.; University of Virginia Department of Medicine, Charlottesville, 1872; Bellevue Hospital Medical College, New York, 1873; member of the Medical Association of Georgia; aged 71; died, February 9.

George Harcourt Willis, Winslow, Ill.; Rush Medical College, Chicago, 1900; served as mayor of Winslow for two terms, and for eleven years as secretary of the board of education; aged 50; died, February 17, of pneumonia.

Andrew A. McMeans ✠ Monterey, Mexico; Trinity Medical College, Toronto, Canada, 1889; member of the State Medical Association of Texas; served for several years as American vice consul in Monterey; aged 56; died, February 9.

Lemuel B. Spung, New Lexington, Ohio (licensed, Ohio, 1897); member of the Ohio State Medical Association; aged 63; died, February 11, at the Bethesda Hospital, Zanesville, of peritonitis, following an appendectomy.

Domer Gheen Smith ✠ Freeport, Ill.; Jefferson Medical College of Philadelphia, 1899; for several years secretary of the Tri-State Medical Society (Illinois, Iowa, Wisconsin); aged 56; died, February 28, of pneumonia.

Robert Beardsley Goodyear, North Haven, Conn.; Yale University School of Medicine, 1868; member of the Connecticut State Medical Society; Civil War veteran; aged 87; died, February 21, of senility.

James Fotheringham Kendrick, West Burke, Vt.; University of Vermont College of Medicine, Burlington, Vt., 1899; member of the Vermont State Medical Society; aged 52; died, January 15, of paralysis.

Lester Ours, Wheeling, W. Va.; Jefferson Medical College of Philadelphia, 1922; aged 25; intern at the Ohio Valley General Hospital, where he died, February 13, of appendicitis.

William Morrison, Brooklyn; Long Island College Hospital, 1909; also a clergyman; formerly pastor of the First Baptist Church of Flushing, N. Y.; aged 74; died, February 20, of cerebral hemorrhage.

Cornelius Abram DeMund, Ridgewood, N. J.; Cornell University Medical College, New York, 1900; member of the Medical Society of New Jersey; aged 44; died, February 3, of valvular heart disease.

George Alexander Graham, Raeford, N. C.; New York University Medical College, New York, 1876; member of the Medical Society of the State of North Carolina; aged 70; died, February 1.

Altero Lipa B. Weindrug, New York; University and Bellevue Hospital Medical College, 1900; member of the Medical Society of the State of New York; aged 49; died, February 20, of pneumonia.

Louis Lawrence Wilencheck, Fairfield, Idaho; University of Colorado School of Medicine, Denver, 1916; member of the Idaho State Medical Association; aged 31; died, January 27, of influenza.

Albert Ai Pratt, Enosburg Falls, Vt.; University of Vermont College of Medicine, Burlington, 1904; member of the Vermont State Medical Society; aged 53; died, January 12, of myocarditis.

Oscar W. Whitacre, West Frankfort, Ill.; St. Louis College of Physicians and Surgeons, St. Louis, 1909; member of the Illinois State Medical Society; aged 40; died, February 11, of tuberculosis.

Charles Marchant Ramsdell, Cove, Ore.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1877; aged 68; died, February 8, following a long illness.

Charles Bellamy Young ✠ Middletown, Conn.; Medical Department of Columbia College, New York, 1894; on the staff of the Middlesex Hospital; aged 54; died, February 1, of diabetes.

Arthur M. Eastman, Minneapolis; Hahnemann Medical College of Philadelphia, 1879; president of the Minnesota State Board of Medical Examiners; aged 67; died, February 23.

William Blaine Judy ✠ Mount Vernon, N. Y.; Northwestern University Medical School, Chicago, 1919; formerly on the staff of Mount Vernon Hospital; aged 30; died, February 19.

George Francis Caldicott, Worcester, Mass.; Tufts College Medical School, Boston, 1921; on the staff of Worcester City Hospital, where he died, February 11, of pneumonia, aged 26.

Thomas Hartley Hall, Dublin, Ga.; Pennsylvania Medical College, Philadelphia, 1859; member of the Medical Association of Georgia; aged 85; died, February 12, of senility.

John Wesley Corman ✠ North Tonawanda, N. Y.; University of Toronto Faculty of Medicine, Toronto, Canada, 1874; aged 73; died suddenly, February 8, of heart disease.

Minerva A. Kline, Chicago; Hahnemann Medical College and Hospital of Chicago, 1892; aged 60; died, March 2, at the Hahnemann Hospital, of myocarditis.

William P. Burge, San Francisco; Western Homeopathic College, Cleveland, 1866; aged 89; died, February 1, at the Old People's Home, of arteriosclerosis.

George Benjamin Phelps, New York; Medical Department of Columbia College, New York, 1883; aged 68; died suddenly, February 15, of heart disease.

John Alfred Remington ✠ Central Falls, R. I.; Bellevue Hospital Medical College, New York, 1891; formerly state senator; aged 55; died, February 13.

Lyman A. Clark, Utica, N. Y.; New York Homeopathic Medical College, New York, 1869; aged 77; died, February 7, at the Masonic Home, of senility.

William H. H. Tate, Heflin, Va.; Louisville Medical College, Louisville, Ky., 1875; Confederate veteran; aged 81; died, February 2, of senility.

Joseph B. Morrison, Maryville, Mo.; Jefferson Medical College of Philadelphia, 1861; Civil War veteran; aged 86; died in February, in New York.

Stewart Newell Pool ✠ Pittsburgh; University of Pennsylvania School of Medicine, Philadelphia, 1891; aged 55; died, February 19, of pneumonia.

Norton Hills Pardon, Glendale, Calif.; University of Michigan Medical School, Ann Arbor, 1894; aged 54; died, February 9, of heart disease.

Thomas Leo Callen, East Newark, N. J.; University of Tennessee College of Medicine, Memphis, 1902; aged 42; died, February 21, of influenza.

Charles Walter Connell, Fall River, Mass.; Medical School of Harvard University, Boston, 1887; aged 63; died, February 7, of heart disease.

J. H. Morrow, Blue Ridge, Texas; St. Louis College of Physicians and Surgeons, St. Louis, 1890; aged 69; died, January 27, of influenza.

James Massey Jones, Interlachen, Fla. (licensed, Florida, 1889); Confederate veteran; also a druggist; aged 79; died, February 12, of senility.

John Mason Phillips, Evansville, Miss.; Vanderbilt University Medical Department, Nashville, Tenn., 1882; aged 63; died, February 8.

Ezra Grumbine, Lebanon, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1868; aged 77; died, February 16, of senility.

William E. Wisner, Columbus, Ind.; Cincinnati College of Medicine and Surgery, Cincinnati, 1870; aged 90; died, February 8, of senility.

W. H. Emmons, Phoenix, Ariz.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1874; aged 82; died, January 26, of senility.

George W. Stevenson, Phoenix, Ariz.; Curtis Physio-Medical Institute, Marion, Ind., 1894; aged 53; died, January 23, of tuberculosis.

Robert N. Cartwright, Fairfield, N. C.; Jefferson Medical College of Philadelphia, 1884; formerly state senator; aged 65; died recently.

Elijah J. Shelton, Bloomfield, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1864; aged 91; died, February 18, of senility.

George W. Helmick, Columbus, Ohio; Starling Medical College, Columbus, 1877; aged 65; died, February 22, of heart disease.

A. Neal Wood, Ashdown, Ark.; University of Arkansas Medical Department, Little Rock, 1890; aged 57; died, December 15.

John Irvine Hostetter, Colo, Iowa; Chicago Medical College, Chicago, 1880; aged 67; died, February 16, of cerebral hemorrhage.

Edwin D. F. Phillips, Kansas City, Mo.; Kansas City (Mo.) Medical College, 1876; aged 81; died, December 24, of chronic nephritis.

Samuel E. Nixon, Burlington, Iowa; Hahnemann Medical College and Hospital of Chicago, 1874; aged 73; died, February 10.

Samuel William Allen ✠ Chicago; University of Arkansas Medical Department, Little Rock, 1882; aged 61; died, February 10.

Milton C. McBride, Dallas, Texas; Memphis Hospital Medical College, Memphis, Tenn., 1883; aged 64; died, February 7.

William O. St. Sure, Sheboygan, Wis.; Rush Medical College, Chicago, 1893; also a druggist; aged 74; died, February 6.

Callie A. Rennoe, South Bend, Ind.; Rush Medical College, Chicago, 1892; aged 54; died, February 11, of heart disease.

Theodora Tiffee Purkitt ✠ Willows, Calif.; Cooper Medical College, San Francisco, 1894; aged 66; died, February 8.

Henry L. Mann, Kansas City, Mo.; Starling Medical College, Columbus, Ohio, 1875; aged 75; died, February 13.

Oliver H. Fisher, Reading, Pa.; University of Pennsylvania School of Medicine, 1872; aged 76; died, February 4.

Leroy Gullick, Denver; Baltimore Medical College, Baltimore, 1906; aged 40; died, February 4, of pneumonia.

Hamlin Joseph Walters, Lincoln, Neb.; Miami Medical College, Cincinnati, 1875; aged 72; died, February 4.

Calvin K. Jayne, Madison, Wis.; Jefferson Medical College of Philadelphia, 1879; aged 66; died, February 4.

John O. Moxley, Lewiston, Idaho (licensed, Idaho, 1899); also a druggist; aged 77; died, February 8.

Edward J. Thayer, New York; Rush Medical College, Chicago, 1893; aged 57; died, February 15.

Levi D. Allen, Amsterdam, Ohio (licensed, Ohio, 1896); aged 79; died, January 18, of senility.

L. W. Early, Phoenix, Ariz. (licensed, years of practice); aged 68; died, January 31.

The Propaganda for Reform

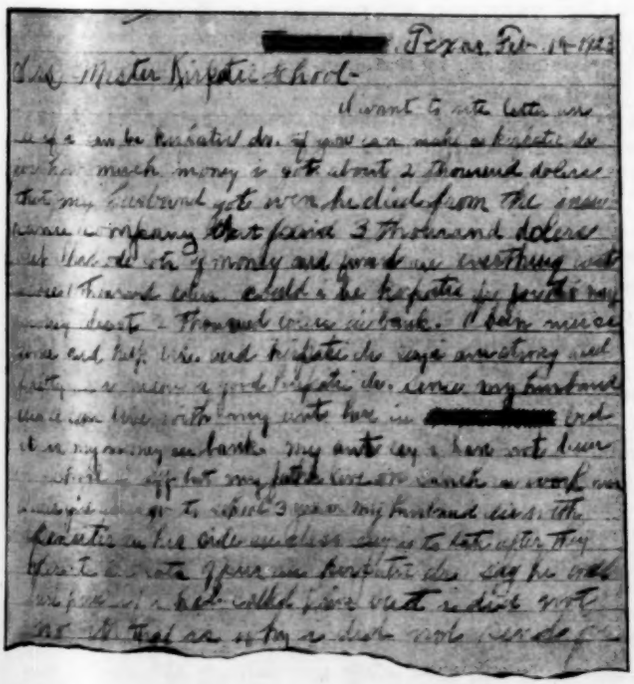
IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

THE MENACE OF CHIROPRACTIC

Practically no Educational Qualifications Necessary for Matriculation in Chiropractic Colleges

The followers of various cults would have the public believe, and the public to some extent does believe, that the various state laws (Medical Practice Acts) governing the practice of medicine are a species of class legislation made in the interests of the medical profession. They are, of course, nothing of the sort. These laws are on the statute books for but one object, that of protecting the public against the ignorant who would hold themselves out to treat human ailments. Another tenet in what Mencken would call the American credo is that the medical profession confines its therapeutic efforts exclusively to the administration of drugs or to surgical procedures. The fact is, the modern physician is bound to no exclusive therapy but uses whatever in his judgment, is indicated.

The objection that the medical profession has to the various "schools" and so-called colleges devoted to turning out disciples of certain cults is not, *per se*, the fact that these cults are inherently unscientific, in that they would treat all conditions by a single therapeutic method; it is that their followers are not trained in the fundamental sciences on which the healing art depends. All that the medical profession

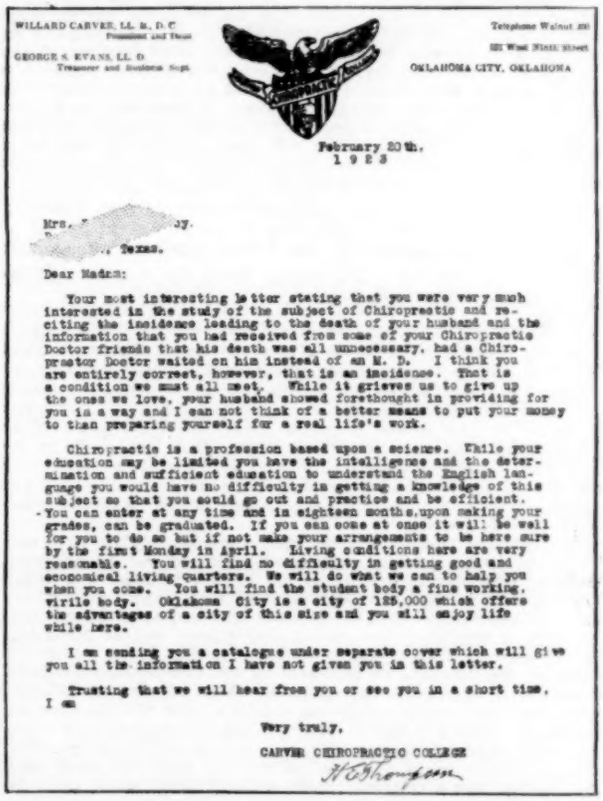


Photographic reproduction (reduced) of part of a letter written to the Carver Chiropractic College asking if the "college" could make a chiropractic doctor out of the writer of the letter.

would ask in the interest of public safety is that chiropractors, neuropathists, spondylotherapists, naprapathists, mechano-therapists, and the followers of a score of other healing cults, be well trained in the fundamentals on which the diagnosis and treatment of disease depends. When a man has been thoroughly grounded in those essentials, it is immaterial, both to the public and to the medical profession, by what particular method he treats the sick, whether it be by the laying on of hands, by the manipulation of the spine, by massaging of the muscles, or what not. All that is asked is that the man who is to minister to the sick shall know enough about the human body and its processes in health and disease to know what he is doing.

CHIROPRACTIC: THE CIRCUS CULT

The most widely advertised cult today is chiropractic. This cult menaces public health, not because its devotees advertise by circus-like methods, nor even because the theory on which it is based is the unscientific and preposterous one that all diseases are due to subluxated vertebræ impinging



WILLARD CARVER, LL. B., D. C.
President and Treas.

GEORGE S. EVANS, LL. D.
Treasurer and Business Supt.

Telephone Walnut 330
111 West Main Street
OKLAHOMA CITY, OKLAHOMA

February 20th,
1923

Mrs. [redacted] Texas.

Dear Madam:

Your most interesting letter stating that you were very much interested in the study of the subject of Chiropractic and reciting the incidence leading to the death of your husband and the information that you had received from some of your Chiropractic Doctor friends that his death was all unnecessary, had a Chiropractor Doctor waited on him instead of an M. D. I think you are entirely correct, however, that is an incidence. That is a condition we must all meet. While it grieves us to give up the ones we love, your husband showed forethought in providing for you in a way and I can not think of a better means to put your money to than preparing yourself for a real life's work.

Chiropractic is a profession based upon a science. While your education may be limited you have the intelligence and the determination and sufficient education to understand the English language you would have no difficulty in getting a knowledge of this subject so that you could go out and practice and be efficient. You can enter at any time and in eighteen months upon making your grades, can be graduated. If you can come at once it will be well for you to do so but if not make your arrangements to be here sure by the first Monday in April. Living conditions here are very reasonable. You will find no difficulty in getting good and economical living quarters. We will do what we can to help you when you come. You will find the student body a fine working, virile body. Oklahoma City is a city of 185,000 which offers the advantages of a city of this size and you will enjoy life while here.

I am sending you a catalogue under separate cover which will give you all the information I have not given you in this letter.

Trusting that we will hear from you or see you in a short time, I am

Very truly,

CARVER CHIROPRACTIC COLLEGE

H. E. Thompson

Photographic reproduction (reduced) of the reply of the Carver Chiropractic College.

on spinal nerves. No, the chief reason is that those who call themselves chiropractors are uneducated men who know practically nothing of the human body and its intricate mechanism. Chiropractors are uneducated because the so-called chiropractic colleges are not educational institutions but "trade schools" which cater to the ignorant and the venal and turn out "graduates" in periods varying from a few weeks to a few months.

Before one can enter a medical school he must not only have had a high-school education but he must also have completed at least two years of college work. Many schools require more than two years of college, some even demanding a degree before the would-be medical student is permitted to matriculate. To enter a chiropractic "college" one does not have to have a high-school education; in fact, he does not need even a common school education. If he can write enough to sign his name and knows enough to read he will be accepted by these "colleges" and after a short period of "instruction" turned out on the public to tinker with that most delicate and marvelous mechanism, the human body.

ONE EXAMPLE

As an example of the type of educational qualification necessary for taking up the study of chiropractic, the following evidence will be of interest. The letter that follows, bearing all of the external and internal evidence of having come from an ignorant and illiterate woman, was sent last month from a Texas town to the "Carver Chiropractic College," Oklahoma City, Oklahoma. We are omitting the name of the town in Texas from which the letter was sent, but

otherwise are reproducing it *verbatim et literatim*. We also give a photographic reproduction of part of the letter in order more clearly to show its obviously illiterate character. Here is the letter:

"*Sirs, Mister Kirpatic School.* I want to rite letter an see if i can be kirpatic dr. if you can make a kirpatic dr. for how much money i got about 2 thousend dolers that my husband got wen he died from the insurance company that paid 3 thousand dolers but I had ode lots of money and funerl an everything cost more 1 thousand dolers. Could i be kirpatic dr. for this much money about 2 thousand dolers in bank. i been nurse some and help drs. and kirpatic dr say i am strong and pretty an i make a good kirpatic dr. since my husband die I can live with my ant here in ———————— but it is my money in bank. My ant say i have not been in school enuff but my father live on ranch an work wen I was girl and I go to school 3 years. My husband die with apensitis in his side an drs. say it to late after they operate an lots of pus an kirpatic dr. say he could cure him if i had called him but i did not no it that is why i did not send for him an i want to be kirpatic dr so i can cure apensitis sometime. I been ritin some other kirpatic schools and kirpatic colleges but they send me books and dont anser my letters so i can no. if you will anser my letter an tell me if you can make me a kirpatic dr. on how much money i got an how long it will be if i am a widow 24 years old and i will come right away.

Mrs. ————————————, Texas."

In due time the writer of the letter received an answer (which we reproduce in miniature) from the Carver Chiropractic College. The letter ran:

"*Dear Madam:* Your most interesting letter stating that you were very much interested in the study of the subject of Chiropractic and reciting the incidence [*Sic!*] leading to the death of your husband and the information that you had received from some of your Chiropractic Doctor friends that his death was all unnecessary, had a Chiropractic Doctor waited on him instead of an M. D. I think you are entirely correct, however, that is an incidence. [*Sic!*] That is a condition we must all meet. While it grieves us to give up the ones we love, your husband showed forethought in providing for you in a way and I can not think of a better means to put your money to than preparing yourself for a real life's work.

"Chiropractic is a profession based upon a science. While your education may be limited you have the intelligence and the determination and sufficient education to understand the English language you would have no difficulty in getting a knowledge of this subject so that you could go out and practice and be efficient. You can enter at any time and in eighteen months, upon making your grades, can be graduated. If you can come at once it will be well for you to do so, but if not, make your arrangements to be here sure by the first Monday in April. Living conditions here are very reasonable. You will find no difficulty in getting good and economical living quarters. We will do what we can to help you when you come. You will find the student body a fine working, virile body. Oklahoma City is a city of 125,000 which offers the advantages of a city of this size and you will enjoy life while here.

"I am sending you a catalogue under separate cover which will give you all the information I have not given you in this letter.

"Trusting that we will hear from you or see you in a short time, I am.

"Very truly,

"CARVER CHIROPRACTIC COLLEGE

"H. E. Thompson."

Here we have documentary evidence of the type of education and intelligence that one chiropractic college requires for matriculation. According to this "college" the writer of the letter was sufficiently educated and intelligent to get "a knowledge of this subject [chiropractic] so that you could go out and practice and be efficient."

Oroya Fever.—Since at least the time of the Incas, Peru has suffered from a strange disease which has swept over the country from time to time in the form of frightful epidemics, some of which have cost thousands of lives. One of the severest recent outbreaks occurred among the workmen building the Peruvian Central Railway between Lima and Oroya, and it is estimated that at least 7,000 individuals died in it. In 1906 at least one tenth of 2,000 workmen employed building tunnels and bridges on the Central Railway died of the fever, and one bridge in particular, which was the scene of a great many deaths from the disease, has come to be known as the Oroya Fever Bridge. Oroya fever has been constantly confused with other diseases, and it was not until the South American expedition of the Harvard School of Tropical Medicine made an investigation of the disease that some order was brought out of the confusion. Malaria, paratyphoid, and particularly verruga peruviana are the diseases which have been most frequently confused with Oroya fever. —Chandler, Animal Parasites and Human Disease, 1922.

Correspondence

MELANIFEROUS LEUKOCYTES IN THE DIAGNOSIS OF MALARIA

To the Editor:—In and about St. Louis, a district in which the manifestations of malaria are protean in character and of endless variety, it seems strange that a means of diagnosis in malaria is ignored that is used by the American government in the Philippines, employed in the malarial zones of the British Empire, and warmly advocated and championed by no less an authority than Sir Patrick Manson. Since the discovery by Laveran, we have been in a position to explain the observation of Loomis, who forty years ago drew attention to the relationship that existed between pigmented leukocytes and malaria. That plasmodial pigment is engulfed by the phagocytes no one will deny, but in scientific proselytizing I have found that to gain assent in reasoning back from effect to cause, from plasmodial pigment to the plasmodium itself, is quite another matter.

In G. A. Gibson's Text Book of Medicine **1**:311, Manson says: "Pigmented leukocytes are easily made out and are quite as pathognomonic of malaria as the actual plasmodium itself." To those who, after the fashion of the Scotch verdict "not proven," decline to make a positive diagnosis of malaria in the absence of the plasmodium, I would recommend a careful consideration of the foregoing statement. If they will only make a few trials, search unstained blood films for pigmented leukocytes, and control their provisional diagnosis by quinin, I will venture to assert that they will be surprised to find how many cases will prove to be malarial which after blood examinations with most approved staining have been returned as negative by reason of the fact that no plasmodia have been found.

It is not to be expected that plasmodia are always to be found in the peripheral circulation, and therefore it follows that the diagnosis in actual cases of malaria must often rest in abeyance, to the confusion of the physician and the detriment of the patient.

On the other hand, pigmented leukocytes are always to be found in the peripheral circulation in malaria uninfluenced by paroxysm or quinin, and are infallible and ever present guides to diagnosis. In children, especially, in whom usually the paroxysms are not well marked, the search for plasmodia must necessarily often prove futile, whereas the pigmented leukocytes are always present. For myself, I have followed Manson's teaching for the last twenty years, having made almost a thousand blood examinations with this object in view, and can speak with enthusiasm of the labor-saving and time-saving truth of his statement.

The color of the pigment lends itself to a differential diagnosis. Light yellowish or red pigment denotes a simple type of malarial infection, while jet black pigment is indicative of the presence of the estivo-autumnal parasite. The amount of pigment present in the white corpuscles is also helpful in the interpretation of cases.

When the pigment granules in the leukocytes are few in number to the leukocyte, we are necessarily dealing with a case of recent infection. On the other hand, in long standing and chronic cases we should expect to find, and do find, the leukocytes crowded with pigment.

The diagnosis of malaria by Manson's method is simplicity itself. All that is requisite is a microscope with a one-sixth inch objective, a film of freshly drawn, unstained blood, and the ability to recognize small black specks of pigment on the white background of the leukocyte. The only possibility of mistake lies in regard to the pigmented leukocytes found in

the subjects of melanotic sarcoma—a differentiation that may be safely ignored.

JAMES ROSS CLEMENS, M.D., Webster Groves, Mo.
Professor of Pediatrics, St. Louis
University School of Medicine.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

PAN-SECRETIN

To the Editor:—Is the pan-secretin compound, manufactured by Henry R. Harrower, Glendale, Calif., useful in the treatment of diabetes?

F. P. CAPRON, M.D., Providence, R. I.

ANSWER.—Harrower's pan-secretin compound, according to the advertising circular, is "an endocrine combination embodying: (1) A specially prepared extract of *Islets of Langerhans* (pancreas tail), rich in its incretory glycolytic product; (2) An acid extract of the duodenal mucosa containing the pancreatic activator *secretin*, and (3) A small dose of desiccated calves *tonsil*." This formula emphasizes the fact that some of the commercial houses are carrying us back to the days of the shotgun nostrum. It would seem hardly necessary to say that such a combination as that quoted above is unscientific and that, so far as we know, there is no scientific evidence to warrant the belief that such a combination is of value. Four years ago, the Council on Pharmacy and Chemistry published a report (THE JOURNAL, Jan. 18, 1919, p. 213) on some of the Harrower "pluriglandular" mixtures, and gave reasons why such unscientific combinations were not acceptable for New and Nonofficial Remedies. Recently this form of therapy was discussed in the Section on Therapeutics and Pharmacology of the Royal Society of Medicine of London, and Dr. Swale Vincent, professor of physiology at the University of London, in the course of his remarks, stated that many foolish notions are abroad, one, for example, being that a preparation from the pancreas, tonsil and duodenal mucosa, taken by the mouth, is a remedy for diabetes (*British Medical Journal* **1**:105 [Jan. 20] 1923). It is a sad reflection on those physicians—the number surely is comparatively small—who allow themselves to be influenced by "literature" that is sent out by commercial houses to sell their products. It appears to be difficult for some men, physicians included, to resist "the will to believe" and to substitute "the will to question" in these matters.

ELIMINATION OF OXYURIS VERMICULARIS

To the Editor:—I have tried in the last six or seven months to get rid of pinworms (*Oxyuris vermicularis*) in a child, aged 4 years, but apparently have not had good results. I have followed very carefully the instructions given in the textbooks of pharmacology. Please outline a treatment for this condition. I have used santonin in one-fourth grain doses. Please omit my name.

V. M., Ohio.

ANSWER.—It is not surprising that the use of santonin did not lead to a cure of *Oxyuris vermicularis* infestation. These worms, at least in their adult state, live in the large intestine, where an effect from anthelmintics given by mouth cannot be expected. The only justification for the peroral administration of anthelmintics, such as santonin, in this condition lies in the fact that the worms live in the small intestine while they are immature and during impregnation. Santonin treatment might therefore be used in conjunction with the much more important treatment by means of enemas.

The chief emphasis of the treatment must be laid on the prevention of reinfection, as these worms do not proliferate in the intestine. The difficulty lies in the fact that the female worms, each of which carries many thousands of ova, begin to migrate as soon as the ova are ripe. On escaping from the anus, the worms are likely to be crushed, most especially because of the itching and consequent scratching they cause. Thus, the ova become smeared over the anal region, and sooner or later enter the mouth, chiefly by way of the hands. The reason this infestation is so much more common in children than in adults is that the child is much less cleanly and much more prone to carry unclean hands and fingers into its mouth. From this it will be seen that the chief enemy to be exterminated is the sex-ripe female, which has its habitat in the large intestine, most especially the cecum and the rectum. If we succeed in keeping the rectum free from worms for a sufficient length of time, thereby breaking in on the vicious circle of reinfection, the patient will be cured. Hence, it is necessary to employ for a considerable time—several weeks—daily enemas of soap solution, salt solution, dilute vinegar, or even plain water. The presence of chemicals in the enema is probably of no importance. Cleanliness is everything. Not only should we aim to prevent infection of the anal region by consistent enema treatment; but we should also keep the hands and the finger nails scrupulously clean. If several children are closely associated, simultaneous treatment of all is necessary in order to prevent mutual reinfection.

ABORTION AND PREMATURE LABOR

To the Editor:—What is the prevailing interpretation among the profession of the terms "abortion" and "miscarriage"? Some authors, such as Hirst, define abortion as interruption of pregnancy before the fourth month and miscarriage from the fourth to the seventh, while others, such as DeLee, use application of the term abortion to interruption before the seventh month, and refer to miscarriage as a term only popularly used by the laity.

LOUIS TUFT, Pittsburgh.

ANSWER.—"Abortion" is generally used to mean any interruption of pregnancy which occurs before the fetus is viable; interruptions of pregnancy which occur after the fetus is viable, but before full term, are designated "premature labor." There is no sharp line of division, but, as a rule, the end of the twenty-eighth week is taken as such. Physicians use the term "miscarriage" but little in scientific discussions; laymen employ it to designate any premature interruption of pregnancy at any time. In law, any interruption of pregnancy before full term is designated an abortion.

CAUSE OF SUBNORMAL TEMPERATURE

To the Editor:—Please give me the etiology and prognosis of subnormal temperature. Can it be owing to a defect in the endocrine glands?

M. S. CANFIELD, M.D., Frankfort, Ind.

ANSWER.—The preservation of a normal temperature depends on the balance between heat production and heat dissipation. The former is a function chiefly of the muscles, and is the result of metabolic changes. Heat loss is provided for in many ways, chiefly by the exposure of blood in the skin to lower temperatures, and the cooling that comes from sweating and evaporation. A subnormal temperature may result either from diminished heat production or from excessive loss. Under modern conditions of life, with the possibilities for regulating the atmospheric temperature and the skin exposure by variations in the clothing, a subnormal temperature from excessive loss of heat is rare, but may occur from exposure and privation. Diminished heat production occurs in many states of lowered vitality and diminished metabolism; it is likely to be associated with subnormal body temperature. This is almost a normal occurrence in the aged, and is common in many conditions of cachexia and inanition, such as those of convalescence from fevers and in cancer. All conditions of diminished oxygenation, such as congenital heart disease, cardiac failure, alcoholism, jaundice, uremia and pernicious anemia, are likely to cause a subnormal temperature. Endocrine gland disorders associated with diminished basal metabolism of any severity are almost inevitably accompanied with subnormal temperature. Among these conditions, special reference should be made to Addison's disease (suprarenal deficiency) and myxedema (thyroid insufficiency). Subnormal temperatures are often noted in the early stages of tuberculosis, especially in tuberculous meningitis. They also accompany serious shock, such as that due to very severe abdominal inflammations or perforations of a hollow viscus.

USE OF INITIALS TO INDICATE MEMBERSHIP IN AN ORGANIZATION

To the Editor:—As a matter of curiosity, I write to inquire whether it is considered good form to place after one's name initials indicating membership in certain societies; for example, F.A.C.S. or F.A.C.P., as the case may be. Could one with equal propriety use the letters F.A.M.A. as indicating fellowship in the American Medical Association or other societies, varying the letters accordingly?

W. F. VON ZELINSKI, M.D., Fort Bragg, N. C.

ANSWER.—The use of such initials as F.A.C.S., F.A.C.P. or F.A.M.A. to indicate membership in an organization is purely a matter of taste.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

IDAHO: Boise, April 4. Dir., Mr. Harry L. Fisher, Boise.
IOWA: Des Moines, March 8-10. Sec., Dr. Rodney P. Fagen, State House, Des Moines.
MAINE: Portland, March 13-14. Act. Sec., Dr. Adam P. Leighton, 192 State St., Portland.
MONTANA: Helena, April 3. Sec., Dr. S. A. Cooney, Power Bldg., Helena.
NEW HAMPSHIRE: Concord, March 9-10. Sec., Dr. Charles Duncan, Concord.

FURTHER DATA ON THE ALLEGED LACK OF PHYSICIANS AND THE DISTRIBUTION OF IRREGULAR PRACTITIONERS

E. P. LYON, PH.D., M.D.
Dean, University of Minnesota Medical School
MINNEAPOLIS

In *Minnesota Medicine*, February, 1923, I published certain facts with regard to the distribution and supposed need of physicians in Minnesota and neighboring states. Something concerning the distribution of osteopaths and chiropractors was also indicated. These facts were obtained from a study of notices of locations for physicians on file in my office and from a study of the American Medical Association Directory, in comparison with a list of incorporated places in Minnesota as reported by the United States census of 1920.

My conclusions were that a real lack of physicians exists in the Northwest only in a few new and sparsely settled communities; and that the increase in irregulars is not due to a lack of physicians, the osteopaths and chiropractors being located where there are already abundant physicians and not where there are no physicians.

It occurred to me that further light on the questions in which I was interested might be obtained by direct inquiries addressed to the villages of this state. A return post-card was sent to every place in Minnesota with a population between 100 and 1,000. There were 540 places on the list, and 381 replies, or 70 per cent., were received.

The return card bore information as to the (1) number of physicians (M.D.'s); (2) number of osteopaths, and (3) number of chiropractors, with a column for remarks.

The results are summarized in the accompanying table.

SUMMARY OF REPLIES

Population of Place	Number of Replies	Have Physicians (M.D.)	Percentage Having Physicians	Have Osteopath	Have Chiropractor	Osteopath or Chiropractor but No Regular Physicians
From 100 to 199	61	6	10	0	0	0
200 to 299	87	34	38	0	1	1
300 to 399	79	53	67	0	2	0
100 to 399	227	93	41	0	3	1
400 to 499	40	37	93	1	4	1
500 to 599	33	32	97	0	2	0
600 to 699	22	20	91	0	1	0
700 to 799	27	26	97	1	5	0
800 to 899	17	16	95	0	3	0
900 to 999	15	15	100	0	4	0
400 to 999	154	146	95	2	19	1

It will be noted that 95 per cent of places from 400 to 999 population have physicians. Above 900, all places have physicians. Only two places have osteopaths or chiropractors unless they also have regular physicians. In fact, while 239 places in Minnesota of from 100 to 999 population have physicians, only twenty-one irregulars are found in the whole 381 places replying to the questionnaire. The sectarians are in the larger places—places above 1,000 in population.

In my opinion, these figures substantiate the view that there is no widespread lack of physicians, no ground for the statement that osteopathy and chiropractic are filling a need of physicians, no necessity for lowering standards or increasing registration in medical schools.

The line labeled "Remarks" brought out a variety of comments. Many small places without physicians asserted a need for physicians, or stated that good openings existed. Sixteen places of from 100 to 199 population, and twenty-seven of from 200 to 299 made such statements. As soon as one reaches a population of 300 these requests become less, there being twelve requests from towns of from 300 to 399, two requests from towns of from 400 to 499, and none from towns of from 500 to 999.

On the other hand, two small towns with two physicians each make the comment: "We have one doctor to spare."

The places of from 200 to 299 present the most urgent appeals. Several state that they have previously had physicians, and indicate irritation that they cannot get them again. Says one: "Nearest town, 10 miles. We need a doctor and can support one of the right kind. The doctors in this part of the country have all moved to the county seat, and we can either die or be robbed. Just a matter of choice with us. However, it is fine for the doctors." Another says: "We have had several doctors locate in the village in the last twenty years. All made a stake and then moved away to some larger place."

These comments indicate that the farming population is not adjusted to the good roads-automobile-telephone combination. Furthermore, with distance, fees have increased and the farmer objects to that. While country patients may be as well cared for as in the days when physicians were more scattered, the people are not so well satisfied. Probably much of the talk of need for physicians arises from this fact.

Michigan Reciprocity Report

Dr. Beverly D. Harison, secretary, Michigan State Board of Registration, reports that from Jan. 1, 1922, to Jan. 1, 1923, eighty-four candidates were licensed by reciprocity. The following colleges were represented:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Alabama		(1911)	Georgia
University of Arkansas		(1917)	Arkansas
Yale University		(1903)	Connecticut
Georgetown University		(1902)	Dist. Colum.
Howard University		(1895)	Iowa
College of Phys. and Surg., Chicago		(1895), (1905)	Illinois
Bennett College of Eclectic Medicine and Surgery		(1907)	Illinois
Hahnemann Medical College and Hosp. of Chicago		(1906)	Illinois
Loyola University		(1922, 2)	Illinois
Northwestern University		(1910), (1921)	Illinois, (1914) N. Dakota
Rush Medical College		(1897)	Illinois, (1899) (1900), (1916), (1917), (1920, 2), (1921) Illinois, (1915) Arizona, Utah
University of Illinois		(1912), (1913)	Illinois, (1914) Wisconsin
Indiana University		(1921)	Indiana
Medical College of Indiana		(1892)	Indiana. (1898) Texas
State University of Iowa College of Medicine		(1920)	Iowa
Hospital College of Medicine, Louisville		(1900)	Tennessee
Louisville Medical College		(1906)	Indiana
University of Louisville		(1910)	Kentucky
Tulane University		(1910), (1919)	Louisiana
Medical School of Maine		(1907)	Maine
College of Physicians and Surgeons, Baltimore		(1913)	Maryland
Johns Hopkins University		(1918), (1920)	Maryland
Maryland Medical College		(1900)	Maryland
Harvard University		(1908)	Ohio, (1919) Minnesota
Tufts College Medical School		(1917)	Mass.
University of Minnesota Medical School		(1915)	Minnesota
Washington University		(1919)	Missouri
Barnes Medical College		(1898)	Kentucky
Ensworth Medical College		(1903)	Oklahoma
Kansas City Medical College		(1891)	Nebraska
St. Louis College of Physicians and Surgeons		(1918)	Missouri
St. Louis University School of Medicine		(1911), (1918), (1921), (1922)	Missouri, (1921) Iowa
Creighton University		(1910)	Nebraska
Columbia University		(1916), (1918)	New York
University and Bellevue Hospital Medical College		(1920)	New York
University of Buffalo		(1891)	Illinois, (1910), (1920) New York
Leonard Medical College		(1909)	Georgia

Eclectic Medical College	(1899)	Ohio
Medical College of Ohio	(1897)	Indiana
Ohio State University College of Medicine	(1910)	Ohio
Starling Medical College	(1891)	Illinois
University of Cincinnati	(1921)	Ohio
Western Reserve University	(1909)	Mass.
Jefferson Medical College	(1920)	Virginia
Medico-Chirurgical College of Philadelphia	(1915)	Penna.
Temple University	(1920)	Delaware
Meharry Medical College	(1909)	Georgia
University of Vermont	(1892) N. Dakota, (1917)	Vermont
University of Virginia	(1918)	Iowa
McGill University	(1914) New York, (1921)	Maryland
University of Toronto	(1910)	Illinois
University of Vienna, Austria	(1883)*	Illinois
University of Helsingfors	(1907)*	Mass.
University of Budapest, Hungary	(1915)*	Ohio
Catholic University, Louvain, Belgium	(1894)*	Mass.

* Graduation not verified.

Book Notices

PREMATURE AND CONGENITALLY DISEASED INFANTS. By Julius H. Hess, M.D., Professor and Head of the Division of Pediatrics, University of Illinois College of Medicine. Cloth. Price, $5.50. Pp. 397, with 189 illustrations. Philadelphia: Lea & Febiger, 1922.

Medicine has become so enormous in its scope and its facts, and hypotheses concerning disease have accumulated to such an extent that the abbreviations necessary in the general textbooks fall short of the necessary knowledge of the diseases of which these textbooks treat. It is becoming increasingly necessary, therefore, to consult monographs to obtain an adequate idea of any subject in which one may be interested. It is to meet just such a need that this volume appears. It is the only book in English, and the only book of any claim to prominence, if, indeed, it is not the only book that has ever appeared on the subject. In view of the absence of background, it is surising that the writer should have assembled and systematized his facts so well. The book is well written and beautifully illustrated; what is more, the illustrations are to the point. The literature has evidently been studied thoroughly, though it is not quoted exhaustively. The book begins with a short chapter on definitions, followed by one on classification which takes up the etiology of prematurity. This is followed by an excellent chapter on physiology. One is struck after reading this by the fact that our knowledge of the physiology of the premature infant is certainly very limited, although the author has evidently used every endeavor to get at all the facts. In this chapter the roentgen-ray examination of the skeleton presents a new feature and is thoroughly covered. In the clinical chapters one is struck by the great detail in the portions devoted to treatment, a necessary thing since the subject is not well understood by the average physician. On the whole, the book is conservative, well written and instructive. It deals with a subject about which we know little, but such a book is calculated to arouse interest and therefore is of value, not only for the practical information it contains, but also because of the increased interest it is likely to arouse in the subject.

DISEASES OF THE HEART. A Handbook for Students and Practitioners. By I. Harris, M.D., L.R.C.P., Honorary Physician in Charge, Cardiographic Department, Liverpool Northern Hospital. Cloth. Price, $3.50. Pp. 196, with 49 illustrations. New York: William Wood & Co., 1922.

This book is supposed to give a complete account of the diseases of the heart, and it was written for the student and the practitioner. The author did not in either of these respects carry out his intentions. The book is far from being, even in an abbreviated form, a complete presentation of our present knowledge of the subject. Many essentials are omitted: the discussion of chronic adhesive pericarditis may be cited as an example. No mention is made of the marked increase in the size of the heart, or of the perihepatitis with the associated ascites that is so often the outstanding feature in those patients in whom the condition is diagnosed during life. The author is not always in accord with recognized authorities on points generally accepted. Adam-Stokes syndrome is not considered under the subject of heart block. The mechanism of this disorder is explained on the basis of an increase in the refractory period of the ventricle rather than attributed to a defective conduction of the auriculoventricular bundle. The subject matter is poorly presented. The reader is often in doubt as to the point the author wishes to make. This feature alone would make the book undesirable for the student.

GREEK BIOLOGY AND MEDICINE. By Henry Osborn Taylor. Cloth. Price, $1.50. Pp. 151. Boston: Marshall Jones Company, 1922.

GREEK BIOLOGY AND GREEK MEDICINE. By Charles Singer. Cloth. Price, $1. Pp. 128, with 8 illustrations. New York: Oxford University Press, 1922.

Dr. Taylor's volume is part of a series on "Our Debt to Greece and Rome." It comes at a time when it must be inevitably compared with a similar recently published book by Charles Singer of England. The book by Taylor is divided into sections on early biology, the hippocratic writings, Aristotle's biology, progress in anatomy, the system of Galen, and linkage with our modern times. It is thus a series of orderly essays progressing according to a definite scheme, and thereby excellent teaching material. On the other hand, the book by Singer is a delightfully written essay, easily readable, wandering almost nonchalantly among the achievements of the ancient Greeks, picking up a thought or an example here and there, and, on the whole, presenting an excellent picture of the medicine of the classic Greek school. In both books one is confronted by the fact that modern authors incline to read into the philosophy of the ancients knowledge of facts that they could not possibly have known. Such synthesis is so simple as to be exceedingly attractive, but it is likely to be a source of historical error. It is Taylor's belief that the Greeks recognized particularly the fundamental fact in biology and medicine that the organic is distinguishable from the inorganic by its power to heal itself when diseased, or, in other words, that Nature is the greatest healer, and that, regardless of our many discoveries today, we must return to this conclusion. After all, however, we have come a long way in understanding the methods by which the beneficent Nature brings the healing about, and our advances of the last half century need not be slighted in our admiration for the far-sightedness of the ancient observers.

UNIVERSITY OF IOWA STUDIES IN PSYCHOLOGY. Psychological Monographs, Vol. VIII. Edited by Carl E. Seashore. Pp. 378. Princeton: Psychological Review Company, 1922.

In this monograph are fourteen articles on sound perception, two on measurements of motor control, and one on measurement of coordination of eye and hand. In these articles, instruments, technic and norms are discussed. As such they serve as a point of comparison and departure for studies of the diseased. The results of some of the tests of tone perception show a wide range between individuals. The methods and tests are rather too elaborate to lead to their use in the medical clinical laboratories.

YEAR-BOOK OF PHARMACY. Comprising Abstracts of Papers Relating to Pharmacy, Materia Medica, and Chemistry, Contributed to British and Foreign Journals from July 1, 1921, to June 30, 1922, with the Transactions of the British Pharmaceutical Conference at Its Fifty-Ninth Annual Meeting. London: J. & A. Churchill, 1922.

The British Pharmaceutical Association is to be congratulated on the prompt publication of the annual year book. While it does not contain the abstracts for all the year 1922, it covers a large portion of the year and includes the 1921 abstracts left over from the previous edition. This is in favorable contrast with the American Pharmaceutical Association, which has just issued the year book for 1920. The British book contains abstracts in the usual divisions, such as alkaloids, bacteriologic and clinical tests, essential oils, plant analysis, newer remedies, pharmacology and therapeutics, and other phases affecting pharmacy. About one third of the book is devoted to the proceedings and scientific contributions of the British Pharmaceutical Conference.

ENCÉPHALITE HYPERTHERMIQUE. Guérie à Lourdes, le 8 Septembre 1922. Observation Médicale avec Courbe de Température. Par les Drs. H. et J. Bon. Paper. Price, 3 francs. Pp. 23, with 3 illustrations. Paris: A. Maloine et Fils, 1923.

This is plainly faith cure propaganda in the guise of a scientific medical report which is devoid of merit. There is no good reason offered for the diagnosis of encephalitis.

Medicolegal

Agreement Creating a Partnership

(Runo v. Rothschild (Mich.), 189, N. W. R. 183)

The Supreme Court of Michigan says that the plaintiff made an affidavit in which he stated that prior to a certain date he had practiced his profession as an urologist, and the defendant was his assistant. On the date mentioned the plaintiff offered to permit the defendant to continue to occupy the suite of offices, to make use of the laboratory and to practice his profession for the plaintiff's patients, the income from practice and laboratory work to be used to pay all the bills necessary to the maintenance of the offices, the practice and the laboratory, after which the proceeds of the income were to be divided share and share alike. The defendant accepted the offer, and entered on the performance of the agreement, but subsequently failed to pay certain bills and make proper division of the proceeds, it was alleged.

Did this agreement imply a mere hiring of the defendant or a partnership between the parties? The defendant contended that it indicated a partnership, and that therefore the plaintiff's remedy was by way of an accounting, and not an action at law and for the arrest of his copartner; with which the court agrees, in affirming a judgment dismissing this action at law when there was such an arrest. The affidavit, the court says, showed an agreement under which the defendant was to take charge of the plaintiff's offices and equipment and carry on the business for their joint benefit, pay all expenses out of the income, and divide the profits with the plaintiff. This severed their previous relations, under which the defendant was but an employee, and constituted the parties copartners.

While the law has always considered the partnership relation one of contract and intention, it determines the status of the parties from their agreement, and draws their intention from their acts. The defendant had the right to manage and control the business, and his share of the profits was not in the nature of compensation for services rendered to the plaintiff. The plaintiff did not hire the defendant to carry on his practice, but entered into relations with him wholly inconsistent with those of master and servant or employer and employee. The defendant was empowered to act for both in the management of the business, and both were liable for the expenses if the income was not sufficient to pay the same. This was not a mere joint adventure, but a community of interests, with all the essential incidents of partnership rights and liabilities. The agreement delegated to the defendant the power and authority to manage and control practice and laboratory for their common benefit and profit. The plaintiff contributed toward the earning of profits, in the practice to be conducted by the defendant, his offices, laboratory and equipment, and his clientele; and the defendant contributed his time, labor and skill, and such new business as he could command; and these contributions were dedicated to the enterprise for the profits to be derived therefrom.

Validity of Award Based on Condition When Discharged by Physicians

(London Guarantee & Accident Co., Limited, et al. v. Industrial Commission et al. (Colo.), 210 Pac. R. 70)

The Supreme Court of Colorado says that a claimant for compensation under the workmen's compensation act of that state was injured, Aug. 8, 1919. September 19, a voluntary agreement, which the state industrial commission approved, was entered into by the insurance carrier and the claimant, for the payment to him of $10 a week for ninety-two weeks. The case was then set down for hearing, to determine whether the claimant was entitled to any further compensation, and the extent of his permanent disability, if any. It plainly appeared that, at the end of sixty days following the accident, the claimant was told by the attending physicians furnished by the employer, or the insurance carrier, that they could do nothing further for him. Being thus left to shift for himself, he consulted surgeons, who performed two serious and unusual operations, the result of which was an improvement in his condition. His health was not restored, nor did he regain his normal ability to perform manual labor. On the final hearing by the industrial commission, in the latter part of 1921, it appeared to that body, and it so found, that the claimant's disability, at the expiration of the sixty days from the time of the accident, was 80 per cent., and would have so continued had not these operations been performed, but that after the operations were performed the permanent result of the accident was still a loss of 33⅓ per cent. of the use of his right leg. Under these circumstances, the award for permanent disability was computed on the basis of an 80 per cent. loss of the use of the claimant's leg. None of it was for medical attention, but for a permanent disability actually existing when the physicians of the employer or insurance carrier discharged him at the end of the sixty-day period. The making of this additional compensation, which might be equal to, or greater than, the amount of the claimant's expenses incurred for the two operations, was not equivalent to an award by the commission for medical attention in excess of the sum of $200, the maximum allowed by the statute for medical attention during the sixty days immediately following the accident; nor was it equivalent to an award for attention given after the period of sixty days following the accident. Neither the statement that the commission's award for increased permanent disability was an indirect method of payment for medical attention beyond the period of sixty days following the accident, nor one that the award compelled the employer and insurance carrier to pay for an assumed disability which the claimant did not suffer, was borne out by the findings of fact. The statute authorizes the commission, of its own motion, at any time, after notice to the parties interested, to review any award previously made, and on such review to make another award diminishing, maintaining, or increasing the compensation previously awarded, subject to the maximum and minimum provided in the act. The commission, therefore, was authorized in this case to increase the award which it first tentatively made, and had the right to fix the permanent disability as of the date when the physicians of the employer and insurance carrier notified the claimant that they were unable to do anything further for him. If the theory of the employer and insurance carrier to the contrary were sustained, it would be equivalent to penalizing the claimant for taking measures to protect himself by diminishing his disability to perform labor. Considering the wide discretion vested in the commission, and the spirit and purpose of the statute, the court holds that the commission acted humanely as well as fairly to the employer and the insurance carrier, in reaching its ultimate conclusion. Wherefore, a judgment approving the findings and the award is affirmed.

Society Proceedings

COMING MEETINGS

Alabama, Medical Association of the State of, Mobile, April 17-20. Dr. H. G. Perry, State Board of Health, Montgomery, Secretary.

American Association of Anatomists, Chicago, March 28-30. Dr. Lewis H. Weed, Johns Hopkins Medical School, Baltimore, Secretary.

American Association of Pathologists and Bacteriologists, Boston, March 29-30. Dr. H. T. Karsner, Lakeside Hospital, Cleveland, Secretary.

American Association of Physicians, Atlantic City, May 1-3. Dr. Thomas McCrae, 1929 Spruce Street, Philadelphia, Secretary.

American Society for Clinical Investigation, Atlantic City, April 30. Dr. James H. Means, 15 Chestnut Street, Boston, Secretary.

Georgia, Medical Associaton of, Savannah, May 2-4. Dr. Allen H. Bunce, Healey Building, Atlanta, Secretary.

Kansas Medical Society, Kansas City, May 2-4. Dr. J. F. Hassig, 800 Minnesota Avenue, Kansas City, Secretary.

Louisiana State Medical Society, New Orleans, April 10-12. Dr. P. T. Talbot, 1551 Canal Street, New Orleans, Secretary.

Maryland, Medical and Chirurgical Faculty of Baltimore, April 24-26. Dr. J. A. Chatard, 1211 Cathedral Street, Baltimore, Secretary.

North Carolina, Medical Society of the State of, Asheville, April 17-19. Dr. L. B. McBrayer, Sanatorium, Secretary.

Ohio State Medical Association, Dayton, May 1-3. Mr. D. K. Martin, 131 East State Street, Columbus, Secretary.

South Carolina Medical Association, Charleston, April 17-19. Dr. Edgar A. Hines, Seneca, Secretary.

Tennessee State Medical Association, Nashville, April 10-12. Dr. Larkin Smith, 154 Eighth Avenue, N., Nashville, Secretary.

Western Electro-Therapeutic Association, Kansas City, Mo., April 19-20. Dr. Charles Wood Fassett, 115 E. 31st Street, Kansas City, Secretary.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, Chicago

January, 1923, **6**, No. 1

Mists and Halos of Glaucoma. R. H. Elliot, London, England.—p. 1.
Ophthalmoscopy by Red Free Light. A. S. Green and L. D. Green, San Francisco.—p. 16.
Formalized Cartilage Implants Following Enucleation W. B. Doherty, New York.—p. 19.
Action of Miotic Drugs on Diseased Intraocular Structures. R. J. Curdy, Kansas City, Mo.—p. 22.
Accommodation Rule with New Features. C. Berens, Jr., New York.—p. 26.
Etiology of Sympathetic Ophthalmia. H. H. Stark, El Paso, Tex.—p. 29.
Graduate Teaching of Ophthalmology. L. Post, St. Louis.—p. 33.
Parinaud's Conjunctivitis with Eosinophilia. T. W. Weaver and W. G. Gillett, Wichita, Kan.—p. 36.
Unsuspected Foreign Body in Lens. I. A. Abrahamson, Cincinnati.—p. 37.
Indirect Rupture of Sclera. A. Brav, Philadelphia.—p. 38.

American Review of Tuberculosis, Baltimore

January, 1923, **6**, No. 11

Clinical Pathology of Pulmonary Tuberculosis in Adults: Analysis of Five Hundred Necropsies. J. Walsh, Philadelphia.—p. 975.
Statistical Study of Decline in Number of Deaths from Tuberculosis of Lungs in Boston, 1898-1921. J. O. Emerson, Boston.—p. 994.
*Pulmonary Tuberculosis Among Negroes. H. G. Carter, Burkeville, Va.—p. 1002.
*Chronic Bronchiectasis Terminating in Phthisis Florida. H. A. Bray, New York.—p. 1008.
Mechanism of Compensation in Pulmonary Tuberculosis and Its Relation to Physical Signs. H. A. Bray, New York.—p. 1013.
*Complement Fixation Reaction as Applied to Tuberculosis. J. D. Aronson and P. A. Lewis, Philadelphia.—p. 1024.
*Resistance to Experimental Peritoneal Tuberculosis Following Oil Injections. W. F. Petersen and S. A. Levinson, Chicago.—p. 1035.
Preservation of Cultures of Human and Bovine Tubercle Bacilli. H. J. Corper and H. Gauss, Denver.—p. 1040.
*Periodic Variations in Basal Metabolism Rate in Tuberculous Women. P. H. Pierson, San Francisco.—p. 1046.

Pulmonary Tuberculosis Among Negroes.—Carter records the results of treatment of pulmonary tuberculosis in negroes in such a way that an intelligent comparison can be made with those of institutions admitting whites. The results at Piedmont Sanatorium prove beyond question that the negro, although he shows less resistance against the disease than the white man, will respond to treatment for pulmonary tuberculosis, and that if treatment is begun in the early stages of the disease the large percentage of them will continue well. Syphilis as a complication of tuberculosis renders the prognosis more grave than simple tuberculous infection. Syphilis as a disease of the lung has been demonstrated in four clear cut examples in a series of sixteen cases in which the sputum was negative and the Wassermann was positive. If the "young adult type" of tuberculosis is indicative of lessened resistance on account of absence of contact, then the Piedmont records will go to show that the high death rate from pulmonary tuberculosis among negroes is due to absence of contact rather than unsanitary surroundings. The records continue to show that the mulatto has a better resistance against pulmonary tuberculosis than the pure bred negro.

Chronic Bronchiectasis Terminating in Acute Phthisis.—Bray's patient presented evidence of a localized pulmonary lesion at the base of the left lung for a period of at least seven years. This was attended by productive cough and mucopurulent sputum, partly residual and negative for tubercle bacilli. The woman's features were somewhat cyanosed and her fingers clubbed. These clinical manifestations suggested some condition other than tuberculosis, probably bronchiectasis. This suspicion was heightened by the absence of any striking change in the clinical manifestations of the disease during this period, by the negative radiographic examination, and finally by the contrast in the clinical picture, physical and radiographic findings when the condition became complicated by phthisis florida.

Complement Fixation Reaction in Tuberculosis.—Aronson and Lewis believe that they are justified in concluding that in the recent past those who have worked with complement fixation in tuberculosis have given undue weight to the antigen and have paid too little attention to other fundamental factors concerned in the reaction. They found no evidence of more than one antigenic substance, and this was found in acceptable form in several preparations. Petroff's glycerin extract, Besredka's antigen, the alcoholic extract of the tubercle bacillus used by Craig, the simple suspension of the living tubercle bacillus and doubtless the "autolysate" of Corper are of essentially equal worth. The most important feature of the reaction is that the time of primary incubation is longer than in the classical Wassermann reaction (from two to four hours, as against one-half hour). The longer time is necessary to secure comparable results with the bacillary suspension which becomes less practical on this account, as well as by reason of its limited keeping qualities. The authors assert that their experience has continued to show that the application of the reaction in practice is limited by the fact that about 10 per cent. of clinically normal persons give a positive reaction. This is not materially different with any antigen.

Resistance to Experimental Peritoneal Tuberculosis Following Oil Injections.—Petersen and Levinson found that the experimental intraperitoneal injection of oils (sperm oil, peanut oil, liquid petrolatum) in rabbits, following an intraperitoneal inoculation with human tubercle bacilli, occasionally prevents the development of local tubercles in the peritoneum but does not alter the development or course of the tuberculosis in other organs. When bovine strains were used this effect was not apparent. Inasmuch as liquid petrolatum seems as effective as the animal or vegetable oils used, the effect is probably due to the mild peritoneal irritation brought about by the oils which can be demonstrated by histologic examination. In view of the fact that olive oil has been observed to influence the implantation and development of cancer transplants (Nakahara) the authors suggest that it is probable that the mechanism involved in this increased resistance is similar in tuberculosis and cancer.

Variations in Basal Metabolism in Tuberculous Women.—Pierson found a menstrual or premenstrual rise in the basal metabolic rate in tuberculous women, followed by a fall during the postmenstrual period in the few cases studied. He thinks that this variation may explain some of the differences in opinion as to the basal metabolic rate in tuberculosis and should be taken into account when figures are presented regarding this test. There is added evidence that the thyroid or several endocrine glands are involved in the ability of an individual, or a family, to resist tuberculosis.

Archives of Surgery, Chicago

January, 1923, **6**, No. 1, Part 1

*Bile Factor in Pancreatitis. F. C. Mann and A. S. Giordano, Rochester, Minn.—p. 1.
*End-Results of Five Hundred Cases of Chronic Appendicitis. J. B. Deaver and I. S. Ravdin, Philadelphia.—p. 31.
*Eperimental Traumatic Shock. VI. Action of Ether on Circulation in Traumatic Shock. M. Cattell, Boston.—p. 41.
Roentgenologic Aspect of Chronic Appendicitis. H. K. Pancoast, Philadelphia.—p. 85.
*Relation of Heart, Pericardium and Heart Valves to Anterior Chest Wall. L. T. LeWald, New York.—p. 89.
*Value of Pericardiotomy in Diagnosis and Treatment. J. B. Roberts, Philadelphia.—p. 101.
Chronic Noninflammatory Lesions of Knee Joint. M. S. Henderson, Rochester, Minn.—p. 118.
*Gastrojejunal Ulcer: Experimental Study. A. H. Montgomery, Chicago.—p. 136.
*Mesenteric Vascular Occlusion. L. Brady, Baltimore.—p. 15.
Bilateral Chronic Open Pneumothorax Cured by Negative Tension. Report of Case. E. M. Eberts, Montreal, Canada.—p. 168.

Bile Factor in Pancreatitis.—The bile factor in pancreatitis was investigated by Mann and Giordano from two chief aspects, the anatomic and the experimental. The investigation proved that an anatomic and physiologic basis for the theory that reflux of bile may occur in the pancreatic duct does exist. The evidence indicates that such a reflux of bile may rarely be the cause of chronic pancreatitis. The possibility of bringing into play a physiologic mechanism which can infiltrate the pancreas with sterile bile to an extent actually to produce acute pancreatitis is questionable. Granted that the necessary anatomic, physiologic, and patho-

logic factors are present and that the reflux of sterile bile under such conditions does produce pancreatitis, such cause for the condition must be very rare; few cases are on record. It is emphasized that any mechanism which will afford the possibility for bile to pass into the pancreatic duct will also obstruct the flow of pancreatic juice. Furthermore, bile has been found in the pancreatic duct without acute pancreatitis. It is urged that pathologists should, in cases of pancreatitis, examine the relationship of the two ducts to the duodenum and to each other in order to determine whether it is anatomically possible for bile to pass into the pancreatic duct. These observations prove conclusively that the explanation of the cause of most cases of pancreatitis must be sought elsewhere.

End Results of Chronic Appendicitis.—The analysis made by Deaver and Ravdin shows that the most frequent symptom of chronic appendicitis is periodic pain in the right iliac fossa, and in a patient carefully studied this symptom is suggestive. The symptoms in seven cases of tuberculous appendicitis and one case of carcinoma did not differ in any way from the remaining cases in the series. The mortality in the cases in which operation was performed during the quiescent period was 0.27 per cent., while in the cases in which operation was performed during the acute stage it was 2.7 per cent. There seems to be a definite relation between appendicitis and upper abdominal disease and between appendicitis and pelvic disease. Hematemesis may be a manifestation of chronic appendicitis. Of the patients followed up, 83.1 per cent. were entirely relieved, 9.7 per cent. were partially relieved and 7.07 per cent. were unrelieved. The latter group was partly due to pathologic conditions unrecognized because of faulty study and exploration.

Action of Ether on Circulation in Traumatic Shock.—Cattell discusses the effects of ether on the blood pressure, its action on the heart, vasomotor system and blood vessels, and from the point of view of the circulation as a whole, together with a consideration of the changes occurring in shock. In the normal animal, the inhalation of strong ether results in a sudden drop in the arterial pressure, which is quite temporary. As the anesthesia deepens, the pressure gradually recovers until, byt the time the eye reflex has disappeared, it may have returned to its original level. In the shocked animal, there is no recovery of the blood pressure after the primary fall, and the pressure continues to fall to zero even before the eye reflex disappears. Observation on the heart volume of intact cats, and on the contractions of the isolated cold blooded heart, together with deductions from blood pressure records, showed that the administration of ether, from its very beginning, results in a depression of the heart and a decrease in its output, which is sufficient to account for the fall in pressure in both the normal and the shocked animals. Determinations of leg volume with a plethysmograph, perfusion rate measurements, and results obtained by the injection of ether directly into the circulation, together with the form of the blood pressure curves, indicate that ether causes a contraction of the peripheral vessels. In the blood pressure curves resulting from the administration of ether in the normal animal, the primary drop is probably due to an influence on the heart; and the subsequent recovery of the blood pressure, to a compensatory vasoconstriction. In the shocked animal, no evidence of a vasoconstriction produced by ether was obtained, and pressor effects from asphyxia or sensory nerve stimulation become less or are entirely absent. The condition of ether sensitiveness is brought about by any circumstances which tend to depress the general condition of the animal, such as low blood pressure, hemorrhage, severe operations or the injection of acid into the circulation. The cause of the greater depressing influence of ether on the blood pressure in shock appears to be due to a disturbance of the vasomotor system. The usual compensatory constriction no longer occurs to offset the decreased output of the heart, and the pressure continues to fall.

Determining Relation of Heart and Its Valves.—LeWald describes the method he used to make teleroentgenograms which would show the exact position of the heart valves. Cadavers were used in the first study. The position of the heart valves was established by means of wire loops.

Pericardiotomy for Diagnostic Purposes.—Experience in pericardial surgery has given Roberts strong evidence in support of the opinion that careful investigation should always be made by percussion, auscultation and roentgenographic study before resort is had to tapping, or other surgical attacks, as the line of treatment in suspected pathologic conditions of the heart. Recent researches and numerous war experiences in treatment of thoracic wounds and the acknowledged innocuousness of pericardial incisions indicate that it may be at times not only wise, but imperative, deliberately to open the sac of the heart for diagnosis.

Experimentally Produced Gastrojejunal Ulcer.—Of sixty-three dogs that were subjected to a gastro-enterostomy by Montgomery (the pylorus being left patent), a definite gastrojejunal ulcer was found in four. In every case the ulcer was a fairly large, solitary lesion, somewhat indurated and well defined. Macroscopically and microscopically, it showed all the characteristics of a chronic ulcer. These ulcers have a tendency to perforate and are similar in other respects to gastrojejunal ulcers found in man. They seem to occur following hematomas that affect the jejunal mucous membrane at the cardiac angle of the stoma where suturing and hemostasis are imperfect. Hematomas situated at other places along the suture line may be absorbed and produce no damage. These ulcers occurred independent of the kind of suture material employed.

Mesenteric Vascular Occlusion.—Fourteen instances of mesenteric vascular occlusion are analyzed by Brady. In three cases there was no formation of an intestinal infarction and the mesenteric thrombosis was discovered only at necropsy. In thirteen cases, the superior mesenteric vessels were involved; in one instance the inferior. The mesenteric arteries were involved in four cases, the veins in eight. In two cases it was impossible to tell which of the two caused the infarction. These findings are at variance with those of most observers, the majority of whom found the veins involved much less frequently than the arteries. When the mesenteric veins are occluded, it is always due to thrombosis. Either embolism or thrombosis may cause occlusion of the mesenteric arteries. In ten of the cases, the following etiologic factors were found (in four cases no cause for the occurrence of the thrombosis could be found): endocarditis with aortic insufficiency and stenosis clinically, marked arteriosclerosis, and cirrhosis of the liver, two cases each; Raynaud's disease, carcinoma of the pancreas with metastases to the liver and neighboring glands, polycythemia, and partially strangulated inguinal hernia with abscess formation, one case each. In all of the cases there had been a history of abdominal pain and vomiting, and on examination abdominal tenderness and muscle spasm were demonstrated. The majority of the patients, even from the first, were greatly prostrated and looked ill. The picture is indistinguishable from that of acute intestinal obstruction due to causes other than mesenteric thrombosis. Brady says that there is just one method of treatment—immediate laparotomy.

January, 1923, **6**, No. 1, Part 2

Present and Future in Thoracic Surgery. S. Robinson, Santa Barbara, Calif.—p. 247.
*Surgical Treatment of Esophagus. H. Fischer, New York.—p. 256.
*Posterior Mediastinotomy. H. Lilienthal, New York.—p. 274.
Teratoma of Right Chest Cavity. Report of Case. W. Whittemore, Boston.—p. 282.
Radium Needle for Esophagoscope. S. Hankauer, New York.—p. 288.
*Differential Diagnosis Between Tuberculosis and Lung Abscess. L. T. LeWald and N. W. Green, New York.—p. 303.
*Lung Abscess. A. L. Lockwood, Toronto.—p. 314.
*Surgical Treatment of Bronchiectasis; Report of Three Cases of Removal of Lobe of Lung. E. A. Graham, St. Louis.—p. 321.
*Lung Abscess. G. J. Heuer, Cincinnati, and P. M. MacCready, Baltimore.—p. 337.
Interrelationship and End-Results of Chronic Suppurative Diseases of Lungs. W. S. Lemon, Rochester, Minn.—p. 343.
Fibrosis of Lung Following Ligation of Pulmonary Artery, Combined with Phrenicotomy and Following Partial Occlusion of Pulmonary Veins. K. Schlaepfer, Baltimore.—p. 358.
*Lung Suppuration and Its Treatment. W. Meyer, New York.—p. 361.

Surgical Treatment of Esophagus.—While the results of today in this field are not such that one should be boastful about them, Fischer believes that a more hopeful attitude is justified. So far, only in cases of carcinoma of the cardiac

portion of the esophagus has the patient recuperated from the operation and lived.

Posterior Mediastinotomy.—The principle on which the approach made by Lilienthal depends is that of the retraction of the divided ribs at right angles to their long direction, shingling them, one on the other, thus making the deep exposure from below upward, the extent of available space being determined by the length of the wound, especially that portion which divides the intercostal extrapleural structures. Lilienthal asserts that by the methods he has worked out, the exposure is so complete that not only the posterior but also the middle and superior divisions of the mediastinum can be reached with facility and with comparative safety.

Lung Abscess.—Twelve cases form the basis of the report made by LeWald and Green. Eight patients were operated on and the diagnosis established; all of these recovered. Four were not operated on for lung abscess, and, of these, three recovered and one died. The disease in these cases had been either postpneumonic or postoperative. Two cases followed tonsillectomy. One case followed operation on the gall-bladder. In none of this series was a foreign body demonstrated as the cause. The outstanding symptom was a persistent cough with profuse sputum with a fetid odor, accompanied by a loss of weight.

Lung Abscess.—Contrary to the opinion of early writers that abscess of the lung is a common sequel to lobar pneumonia, a survey made by Lockwood of cases reported during the last century indicates that it is a rare sequel. Lockwood is convinced that surgery should not be employed so soon as the diagnosis has been made, except as indicated. Instead, thorough medical treatment, with postural rest and drainage, should be instituted. When this fails, pneumothorax should be produced in selected cases, and surgery reserved for those patients who do not respond to the other two methods.

Lobectomy for Bronchiectasis.—Lobectomy was successfully performed by Graham in three cases of bronchiectasis. He thinks that in advanced cases it is the only method which seems to offer a chance of complete relief from all symptoms.

Chronic Lung Abscess.—A study made by Heuer and MacCready of the late results in sixty-two cases of lung abscess demonstrates that it is the old, long standing chronic lung abscess, with thick fibrous walls, which is often not entirely cured by drainage operations. The patients in their series who are well are those who had acute or recent lung abscess. The patients who are not entirely well all had chronic abscesses of from two to seven years' standing which at operation presented thick fibrous walls.

Lung Suppuration and Its Treatment.—Meyer presents a review of personal experiences and clinical impressions obtained within the last twelve years in the treatment of forty-nine cases.

Johns Hopkins Hospital Bulletin, Baltimore

January, 1923, **34**, No. 383

*Mechanism of Eliminating Phenolsulphonephthalein by Kidney. Proof of Secretion by Convoluted Tubules. E. K. Marshall, Jr., and J. L. Vickers, Baltimore.—p. 1.
*Lipoids of Maternal and Fetal Blood at Conclusion of Labor. J. M. Slemons and H. J. Stander, New Haven, Conn.—p. 7.
*Bactericidal Action of Ultraviolet Light. S. Bayne-Jones and J. S. Van der Lingen, Baltimore.—p. 11.
Wassermann Reaction in Johns Hopkins Hospital. A. Keidel and J. E. Moore, Baltimore.—p. 16.
*Studies on Sugar Tolerance. R. H. Major, Kansas City, Kan.—p. 21.
*Cause of Certain Acute Symptoms Following Gastro-Enterostomy. R. L. Haden and T. G. Orr, Kansas City, Kan.—p. 26.
Selective Culture Medium for Diphtheria Bacillus. E. A. Greenspon, Baltimore.—p. 30.

Elimination of Phenolsulphonephthalein by Kidney.—The results of the experiments made by Marshall and Vickers indicate definitely that the passage of a colloid free filtrate of plasma through the glomerular capsule is insufficient to account for the amount of phenolsulphonephthalein found in the urine on the basis of the amount of free (filterable) phthalein in the blood. It is obvious that the assumption that all of the plasma could be filtered is incorrect; the increasing concentration and, hence, osmotic pressure of the proteins would soon bring filtration to an end. Sufficient allowance has, therefore, been made for the two factors in the calculation which are not accurately known—the volume flow of blood through the kidney and the amount of urine present in the tubules and pelvis of the organ. The authors assert that if their figures for these values are correct, or should the kidney not remove completely the phthalein entering it in the arterial blood, it is also obvious that there is not sufficient total phthalein in the blood at the time of the experiment to account for that which has been eliminated in the urine. The only conclusion which can be drawn is that the substance has been stored in the renal cells at the time of injection and is slowly given out in the urine.

Lipoids of Maternal and Fetal Blood at Conclusion of Labor.—Slemons and Stander found that during the latter part of pregnancy, the fat, lecithin and cholesterol of the blood are more abundant than usual. This change, most likely, represents a preliminary step in the preparation for lactation. The mother's blood contains much more of these substances than the fetal blood does. The difference which exists between the two organisms in this respect varies from case to case; and the values prevailing in one seem to be entirely independent of those in the other. The results of blood analyses in human subjects, like the biologic evidence obtained from vital staining experiments in rodents and carnivora, teach that the placenta is impenetrable to fat and lipoids. Fetal fat, then, must be synthesized; probably from glucose, which is freely supplied by the mother in accord with the demands of her offspring. No characteristic change in the blood fat or blood lipoids accompanies the development of eclampsia and allied intoxications of pregnancy.

Bactericidal Action of Ultraviolet Light.—Jones and van der Lingen describe methods by which exact determinations may be made of the wave lengths of light which kill bacteria. The sparks of various metals were used as sources of ultraviolet light, except in a few experiments when it was necessary to take advantage of sunlight because of its greater intensity. In most of the work, a quartz spectrograph was used. The bactericidal action of light is confined to the ultraviolet region of the spectrum, beginning at 350 microns and extending with increasing intensity to the shortest wave lengths measurable with a quartz spectrograph: 185.6 microns. These limits coincide with the absorption of ultraviolet light by bacteria. The temperature coefficient for the bactericidal action of light was found to be 1.05 over a range of 10 C. An increase in hydrogen-ion concentration of the fluid in which bacteria are suspended during their exposure to ultraviolet light increased the velocity of the bactericidal action. Neither temperature nor the hydrogen-ion concentration rendered bacteria sensitive to the longer wave lengths of light.

Results of Glucose Tolerance Tests.—The results of glucose tolerance tests on sixty patients are reported by Major. The diabetic type of sugar curve with glycosuria is constant in diabetes mellitus. The level of the sugar threshold varied greatly, showing a tendency to be higher in older persons. All the cases of acute nephritis studied showed a diabetic type of blood sugar curve usually without glycosuria. No constant type of curve was obtained in thyroid or pituitary disease. Abnormal curves are frequent and indicate a disturbance of carbohydrate metabolism. Increased tolerance to carbohydrates was found in pituitary disease, often with a high sugar threshold. Some of the glycosurias encountered in hyperthyroidism are due to a lowered renal threshold. These observations indicate that, as a rule, the urine does not show sugar in appreciable amounts until a definite blood sugar level is reached. This level or "renal threshold" varies somewhat in health, but markedly so in disease. Repeated tests on the same individuals show marked variations in this "renal threshold." Four persons classed as "renal diabetics" showed glycosuria with a blood sugar at normal or subnormal levels.

Cause of Certain Acute Symptoms Following Gastro-Enterostomy.—Three cases are reported by Haden and Orr showing a high level of nonprotein nitrogen of the blood, low blood chlorids and suppression of chlorid excretion following gastro-enterostomy. One patient had a marked

alkalosis; two patients had a carbon dioxid combining power at the upper limit of normal when first determined. Two patients also had a very high nitrogen excretion in the urine. All three patients presented clinical symptoms of a severe intoxication. The clinical picture and laboratory findings are believed to be due to an intoxication arising in the upper intestinal tract. The fundamental cause in these cases is probably a duodenal obstruction at the site of the gastroenterostomy which interferes with drainage of the duodenal loop.

Journal of Bone and Joint Surgery, Boston

January, 1923, **5**, No. 1

Osteochondritis Dissecans. Report of Cases. A. H. Freiberg, Cincinnati.—p. 3.
Combined Cistern and Lumbar Puncture; An Aid in Diagnosis of Compression of Spinal Cord. J. B. Ayer, Boston.—p. 18.
Fracture of Spine with Cord Involvement. W. J. Mixter, Boston.—p. 21.
*Crush Fractures of Spine. J. W. Wallace, Pittsburgh.—p. 28.
*End-Result in Four Cases of Severe Destructive Injury to Hip. T. S. Mebane, M. C., U. S. Army.—p. 70.
Treatment of Congenital Dislocation of Hip. E. H. Bradford, Boston.—p. 76.
*Use of Index Finger for Thumb: Some Interesting Points in Hand Surgery. J. Dunlop, Los Angeles.—p. 99.
Structural Scoliosis Complicated by Paralysis of Lower Limbs; Report of Case. S. Kleinberg, New York.—p. 104.
*Synovectomy in Chronic Infectious Arthritis. P. P. Swett, Hartford, Conn.—p. 110.
Congenital Elephantiasis of Toes. H. S. Thatcher and T. Wheeldon, Richmond, Va.—p. 122.
Conservation of Muscles in Paralytic Deformities of Foot. P. W. Roberts, New York.—p. 123.

Crush Fractures of the Spine.—Eighty-two cases of fracture of the spinal column are analyzed by Wallace. A great majority of these cases had been unrecognized and consequently untreated. In six cases the method of injury was not given. In nine cases the history of the injury gave no definite forcible flexion of the spine and the mechanism of the fracture could not be determined. In sixty-seven cases a definite history of forcible flexion of the spine was given. In every case in which the history showed that the patient was caught in a flexed position and had his spine flexed so that the head was forced between the legs, a fracture of one of the lower vertebrae was found. In twenty-three cases there were fractures elsewhere in the body. Fracture of the transverse processes was the most common injury. This occurred on either one or both sides and of the vertebra crushed; sometimes the vertebra above and below. Fracture of the spinous processes was rather rare, having occurred in only three cases. Fracture of the articular processes occurred in one case. The data on the complaints of the patients are not complete, but it appears that in half the cases the patients not only had pain in the back, but also had pain referred to other parts, generally the legs, also to the hips, chest, abdomen, head, etc. A few patients had no pain in the back, but had referred pain. A few had no pain whatever.

Severe Destructive Injury to Hip.—The four cases cited by Mebane are instructive in that they demonstrate that considerable loss of substance of the upper end of the femur can be followed by a fairly satisfactory functional result. They also demonstrate that this result can occur in spite of prolonged infection. These results show that extensive resections of the upper end of the femur, in adults, for severely infected fractures, are justified. They would suggest, also, that it might be justified in severe tuberculous or septic disease, in which the mortality is high, recovery slow, and tendency to permanent organic damage by amyloid degeneration is great.

Use of Index Finger for Thumb.—Dunlop's patient had lost the thumb of his right hand; in addition he had a number of fractures in the carpal area; the wrist was stiff or nearly so in the straight position, and the index finger, due to the destruction of the base of the metacarpal, was somewhat shorter than normal, whereby the metacarpophalangeal joint was retracted. The extensor muscle of the index finger was not functioning, and the finger was slightly flexed and abducted under the middle finger. The position of the index finger had a great deal to do with the lack of functioning of the middle, ring and little fingers at the metacarpophalangeal joint. With the hand in this condition the patient had used it but little and there was practically no motion, except a slight amount in the two interphalangeal joints. The problem, then, as it appeared to Dunlop, was to get the index finger out of the way of the other fingers and use it in place of the thumb. This was done by rotating the metacarpal and the remaining portion of the finger after an osteotomy at the point of fracture and placing the finger in the position of the thumb when taking hold of objects. The operation was successful. The finger made a good thumb.

Synovectomy in Chronic Infectious Arthritis.—Fifteen synovectomies have been performed by Swett on eight patients suffering with chronic infectious arthritis. The operation consisted in opening the joint, generally at the site of the greatest thickening and effusion, and then with scissors and forceps dissecting out all of the diseased inner layers of the synovial membrane down to what appeared to be healthy tissue. The joints have all been closed without drainage, and with no fixation. The cases, with one exception, were all of long standing showing marked joint effusion, capsular thickening, and fusiform swellings. Mechanical improvement in the operated joints was promptly manifested by a restoration of painless function in every case, but in two cases a relapse occurred very shortly, and in one of these two cases, reoperations were performed with ultimate, complete recovery. So it may be said that only one case was a failure, and that twelve cases were successful from the point of view of joint mechanics.

Journal of Experimental Medicine, Baltimore

January, 1923, **37**, No. 1

*Reverse Selective Bacteriostatic Action of Acid Fuchsin. J. W. Churchman, New York.—p. 1.
*Method for Permanent Sterile Drainage of Intra-Abdominal Ducts, as Applied to Common Bile Duct. P. Rous and P. D. McMaster, New York.—p. 11.
Intestinal Flora in Mouse Typhoid Infection. L. T. Webster, New York.—p. 21.
Ox Bile Sensitization in Mouse Typhoid Infection. L. T. Webster, New York.—p. 33.
*New Method for Mammalian Decerebration. C. F. Schmidt, Philadelphia.—p. 43.
*Action of Drugs on Respiration. I. Morphin Series. C. F. Schmidt and W. B. Harer, Philadelphia.—p. 47.
*II. Ether, Chloroform, Chloral, Urethane, Luminal, Magnesium, Caffein, Strychnin and Atropin. C. F. Schmidt and W. B. Harer, Philadelphia.—p. 69.
*Functional and Anatomic Study of Excretion of Hemoglobin by Kidney. Y. Fukada and J. Oliver, San Francisco.—p. 83.
*Mechanism of Vomiting Induced by Antimony and Potassium Tartrate (Tartar Emetic). S. Weiss and R. A. Hatcher, New York.—p. 97.
Blood Destruction During Exercise. II. Demonstration of Blood Destruction in Animals Exercised After Prolonged Confinement. G. O. Broun, New York.—p. 113.

Selective Bactericidal Power of Acid Fuchsin.—Churchman asserts that acid fuchsin possesses a bactericidal power which is selective as between a gram-negative and gram-positive spore-bearing aerobic organism. The selective feature is the reverse of that of gentian violet. This reverse selective activity is also possessed by simpler sulphonated substances and would appear to be dependent in some way on the presence of sulphur trioxid radicals. Selective penetration, if at all concerned in the behavior of gentian violet and acid fuchsin toward bacteria, must play a very minor rôle. In the case of gentian violet the power to kill organisms and the power to prevent their growth run parallel, so far as the selective feature is concerned. In the case of acid fuchsin, the bacteriostatic and bactericidal selective features do not run parallel. *Bacillus pyocyaneus*, an organism resistant to gentian violet, is quite susceptible to acid fuchsin.

Permanent Sterile Drainage of Common Bile Duct.—The success of the method employed by Rous and McMaster lies in the interpolation, with special care for asepsis, of a long drainage tube between the common duct and the opening in the abdominal wall. The tube must be pliable near the cannula, else the latter may be pushed askew through leverage exerted by the viscera, with obstruction as a result; and it must be resistant where it passes the abdominal wall to sustain muscular contraction. To gain these ends, a curved glass tube is employed with, on one limb, the soft black rubber tubing that connects with the cannula, and, on the

other, a piece of red duodenal tubing that is to pass through the abdominal wall. The entire U of rubber and glass should be as long as the size of the abdominal cavity will readily permit.

New Method for Mammalian Decerebration.—In the method described by Schmidt the brain stem is nearly encircled by a ligature passed about it through suitable openings made in the skull. Its free ends emerge through the roof of the mouth. When the ligature is drawn down tightly against the floor of the skull, the brain stem is severed and the vessels at the base of the brain are compressed.

Action of Morphin Series on Respiration.—A method is described by Schmidt and Harer for recording intrathoracic pressure in cats without opening the pleural cavity; active expiratory movements were elicited by inhalation of a constant carbon dioxid air mixture for a given time and a study was made of the action of drugs on inspiration and expiration. Morphin and heroin were found to exert a selective depressant action on the central expiratory mechanism, and the slower rate, with relatively unaltered depth, seemed to be due, at least partly, to the slower rate of emptying the lungs. Codein had no depressant action on the respiration of decerebrated cats. Larger doses of morphin or heroin had no further depressant effect on rate or depth of breathing after expiration was made passive, unless circulatory depression appeared, and failure of circulation seemed to be the cause of respiratory depression, rather than the reverse relation. In decerebrated animals large doses of morphin and moderate doses of codein stimulated the spinal cord, and expiration became active, with a faster rate of breathing. The characteristic action of morphin and heroin on the respiration of the cat is apparently limited to a depression of active expiration.

Action of Ether, Chloroform, Etc., on Respiration.—The depressant drugs studied by Schmidt and Harer in this series of experiments were found to resemble morphin and heroin in that they depressed expiration more than inspiration, but they acted only in narcotic doses and always depressed inspiration at the same time. Ether caused a sharp expiratory rhythm, persisting until narcosis was very deep, probably a result of irritation of their air passages. Chloroform sometimes caused dyspnea, even in very deep narcosis, probably because of circulatory depression. Chloral hydrate made respiration more rapid, but shallower. Urethane usually made expiration active, often with inspiratory pauses, such as may follow vagotomy. Magnesium seemed to produce the most uniform, uncomplicated depression of all the depressants tried. Phenobarbital (luminal) resembled morphin and heroin more closely than any of the general depressants, making expiration passive without depressing inspiration, but it acted only in narcotic doses, unlike morphin and heroin. Caffein and strychnin, whenever they caused acceleration after morphin, brought back active expiration. Atropin never stimulated, and commonly acted as a synergist to morphin. It is suggested that there is a separate central mechanism for the control of each of the phases of respiration, and that, while each responds to the same chemical stimuli, the threshold is higher for expiration than for inspiration. Evidence is presented to indicate that if expiration remains passive, a marked increase in depth of breathing may slow the rate, and a respiratory mechanism that lacks active expiration may be so inefficient that a carbon dioxide concentration which stimulated when expiration was active may depress when it is passive.

Excretion of Hemoglobin by Kidney.—Fukuda and Oliver are of the opinion that the anatomic and functional findings in hemoglobin excretion are best explained by the assumption of a filtration of this substance through the glomerulus and an additional excretion of it by the tubule cells. Absorption of water aids in the concentrating process, and is most marked in the collecting tubules.

Mechanism of Vomiting Induced by Tartar Emetic.—The findings obtained by Weiss and Hatcher in their experimental study point to the heart as the seat of reflex vomiting following the intravenous injection of tartar emetic. The intravenous injection of tartar emetic induces afferent emetic impulses which pass from the heart to the vomiting center mainly by way of the vagus, to a much less extent by way of the sympathetic nerve and the stellate ganglia. The introduction of tartar emetic into the stomach induces afferent emetic impulses which pass upward mainly by way of the vagus, to a much less extent by way of the sympathetic nerve. The introduction of tartar emetic into the duodenum induces afferent emetic impulses which pass upward partly by way of the sympathetic nerve, partly by way of the vagus. It seems probable that the path taken by afferent emetic impulses induced in the gastro-intestinal tract by tartar emetic depends on the innervation of the organ concerned, and not on only selective action of the poison on the afferent nerve.

Journal of Industrial Hygiene, Boston

January, 1923, **4**, No. 9

Consequences of Myopia as Industrial Disease of Eyes. N. B. Harman, London, England.—p. 371.
Comparative Efficiency of Circular Konimeter and Palmer Water Spray Apparatus for Determination of Dust Content of Air. C. E. A. Winslow and R. Jordan, New Haven, Conn.—p. 375.
Rôle of Syphilis in Industrial Disablement: Analysis of Two Hundred and Ninety-One Physical Surveys. P. Edmunds, Baltimore.—p. 380.
Pharmacology of Phenylenediamines. P. J. Hanzlik, San Francisco. —p. 386.
Effects of Exposure to Arsenic Trichlorid on Health. S. Delepine. —p. 410.

Laryngoscope, St. Louis

January, 1923, **33**, No. 1

Improvised Artificial Drum as Aid to Hearing. Study of Certain Principles Involved. P. D. Kerrison, New York.—p. 1.
Case of Tuborrhea of Right Ear, Impaired Hearing of Left Ear and Polyarthritis Due to Purulent Sinusitis. G. Wolf, New York.—p. 10.
Indications and Contraindications for Submucous Resection of Nasal Septum. J. N. Hoffmann, Canton, Ohio.—p. 13.
Complete Traumatic Destruction of Vestibular Function with Unusually Slight Coincident Cochlear Involvement. S. O. Fields, Norfolk, Va. —p. 16.
Correction of External Deformities of Nose by Intranasal Route. H. B. Blackwell, New York.—p. 21.
Generalized Clonic Spasms, Hemiparesis and Coma Result of Lateral Sinus Thrombosis. S. Salinger, Chicago.—p. 27.
Asthma, Hay-Fever, Nasal Hydrorrhea and Angioneurotic Edema. C. B. Williams, Mineral Wells, Texas.—p. 31.
Cysts of Bursa Pharyngea; Report of Two Cases. F. A. Figi, Rochester, Minn.—p. 37.
Management of Certain Nose and Throat Disorders in Singers and Speakers. I. W. Voorhees, New York.—p. 42.
Migrating Foreign Body (Pin) in Bronchus. G. W. Fletcher, Winnipeg.—p. 53.

Philippine Islands Medical Association Journal, Manila

November-December, 1922, **2**, No. 6

Rupture of Uterus; Nine Case Reports. H. Acosta-Sison, Manila.—p. 269.
Parkinsonian Syndrome in Lethargic Encephalitis. Six Cases. E. Domingo and W. Vitug, Manila.—p. 281.
Case of Multiple Neurofibromatosis (Von Recklinghausen's Disease). J. Rodriguez, Culion, Palawan.—p. 289.
Case of Nodular Disseminated Nonulcerative Syphilides. P. Gutierrez, Manila.—p. 293.

Nodular Disseminated Nonulcerative Syphilids.—The principal points of interest in Rodriguez' case are (1) the absence of the characteristic pigmentation from the onset of the disease to the present; (2) the inconspicuous character of the nodules, some of which were as large as a small orange but were hardly visible on inspection, in marked contrast to the prominent sessile or pedunculated and often pendulous growths commonly seen in this disease, and (3) there were no marked mental symptoms. The patient was only 17 years of age. His blood Wassermann was negative.

South Carolina Medical Association Journal, Greenville

January, 1923, **19**, No. 1

Tuberculosis of Kidney. M. Weinberg, Sumter.—p. 366.
Genito-Urinary Routine Suggested as Practical for General Practitioner. M. H. Wyman, Columbia.—p. 372.
Humans, with Especial Reference to Asthma and Hay-Fever. H. M. Davidson, Atlanta, Ga.—p. 377.
Paranasal Sinuses of Children with Special References to Ocular Symptoms. E. W. Carpenter, Greenville.—p. 381.

Tennessee State Medical Association Journal, Nashville

January, 1923, **15**, No. 9

Angina Pectoris. J. O. Manier, Nashville.—p. 389.
Early Diagnosis of Syphilis. M. Haase and C. H. Marshall, Memphis.—p. 392.
Results Following Belfield's Operation in 101 Cases of Seminal Vesiculitis. J. E. Hall and J. H. Litterer, Nashville.—p. 395.
Duty and Responsibility in Face of Abortion Evil. J. C. Ayers, Memphis.—p. 400.
Management of Perineum Following Labor. L. E. Burch, Nashville.—p. 405.
Things Every Physician Should Know About Etiology and Prevention of Mastoiditis. A. C. Lewis, Memphis.—p. 407.
Various Phases of Endocrine Conditions. Y. W. Haley, Nashville.—p. 409.
Plea for Early Treatment of Squint. M. B. Seligstein, Memphis.—p. 412.
Importance of Early Correction of Cross Eye Deformity. B. P'Pool, Nashville.—p. 414.

Texas State Journal of Medicine, Fort Worth

January, 1923, **28**, No. 9

Activities of the State Health Department. J. H. Florence, Austin.—p. 442.
Why We Should Have Whole Time County Health Officers. A. P. Harrison, Austin.—p. 445.
City Health Department. W. T. Davidson, Dallas.—p. 450.
Municipal Health Officer and Industry. A. H. Flickwir, Houston.—p. 454.
Physician and Public's Health. M. F. Bledsoe, Port Arthur.—p. 456.
Plague Suppressive Measures. H. G. White, Beaumont.—p. 458.
Work of Biologic Survey as It Affects Disease Carriers. W. B. Bell, Washington, D. C.—p. 461.
Proper Field of Public Health Nurse. E. L. Hamner, Fort Worth.—p. 466.

Wisconsin Medical Journal, Milwaukee

January, 1923, **21**, No. 8

Renal Calculi. D. N. Eisendrath, Chicago.—p. 349.
Diabetes Mellitus. Diagnosis and Treatment. B. H. Schlomovitz, L. F. Jermain and B. L. Schuster, Milwaukee.—p. 355.
Modification of John Young Brown Operation for Treatment of Chronic Ulcerative Colitis; Report of Case. E. H. Mensing and W. Thalhimer, Milwaukee.—p. 362.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Tuberculosis, London

January, 1923, **17**, No. 1

Some Reasons for Failure in Solving Problems Connected with Tuberculosis. J. MacKenzie.—p. 12.
Shall We Slaughter Milk Cows Which React to Tuberculin? A. Calmette.—p. 15.
Notification of Tuberculosis. R. Dudfield.—p. 20.
Education of Tuberculous Patient. H. O. Blanford.—p. 24.
*Sanatorium Treatment of Tuberculosis Contrasted with Home Treatment. G. L. Cox.—p. 27.

Sanatorium Treatment of Tuberculosis Contrasted with Home Treatment.—As the result of the analysis of 4,067 histories of adults who commenced treatment during the five years from 1914 to 1918, so far as comparison is possible, Cox is convinced that patients in the early and intermediate stages of pulmonary tuberculosis who have undergone a course of sanatorium treatment, even for three or four months, fare appreciably better in health in later years than do those who did not receive such form of treatment. Of 1,047 patients in the early and intermediate stages with negative or absent sputum commencing treatment during the five year period, 14.0 per cent. of the sanatorium patients had died at the end of 1921, and 37.7 per cent. of the nonsanatorium patients had died at the end of 1921; and of the 1,263 patients with positive suptum, 61.2 per cent. of the sanatorium patients had died at the end of 1921, and 81.3 per cent. of the nonsanatorium patients had died at the end of 1921. Cox emphasizes that in both sanatorium and nonsanatorium cases early diagnosis is a very important factor in the successful treatment of pulmonary tuberculosis. In both sanatorium and nonsanatorium cases, patients with a negative or absent sputum throughout treatment are much more likely to remain fit for work, and less liable to succumb to the disease than those with tubercle bacilli in the sputum. In the sanatorium cases the mortality from pulmonary tuberculosis is greater among patients with a positive sputum, aged between 15 and 25 years, than in the other age groups.

Calcutta Medical Journal

November, 1922, **27**, No. 5

Studies on Quinin. M. M. Dutt.—p. 201.
Digitalis. J. C. Aich.—p. 232.
Ophthalmic "Don'ts" for General Practitioners. S. K. Ganguly.—p. 237.

Glasgow Medical Journal

December, 1922, **98**, No. 6

Study of Diets and Economic Conditions of Laboring Class Families in Glasgow in June, 1922. A. M. T. Tully and E. M. Urie.—p. 353.
*Rare Case of Polydactylism of Foot. G. H. Edington and W. B. Primrose.—p. 369.
*Review of Service Patients in Mental Hospital. D. K. Henderson and R. D. Gillespie.—p. 375.
*Outbreak of Food Poisoning by Milk Caused by Bacillus Aertrycke. W. R. Wiseman.—p. 390.

January, 1923, **17**, No. 1

Dr. John Borland, First Surgeon to Kilmarnock Infirmary: His Life and Work. J. C. McVail.—p. 1.
Cases of Perforation of Bowel and Rupture of Heart. D. Fraser.—p. 19.
Treatment of Early Opacities in Senile Lens, with Demonstration of Six Cases. W. B. I. Pollock.—p. 32.

Rare Polydactylism of Foot.—The abnormality in the case described by Edington and Primrose consisted of three supernumerary toes occupying the cleft between the hallux and the normal second toe of the left foot. The supernumerary digits were not all in the same plane, one being dorsal, and two being displaced toward the plantar surface of the foot. These last were webbed in half their length, and were capable of active movements; the dorsal digit was not actively mobile, and its nail showed distinct indication of longitudinal division into two. The hallux was not quite so broad as in the normal foot. A roentgenogram showed three supernumerary metatarsal bones, of which two belonged to the plantar toes, and the third, which was imperfect, to the dorsal toe.

Review of "Service" Patients in Mental Hospital.—Henderson and Gillespie analyze 113 "service" cases of the more chronic type. The existing literature is summarized, and various points noted. The confusion and indefiniteness in diagnostic terminology in these papers is deprecated; and a plea is recorded for a uniform system of diagnostic classification. Most of the papers mentioned emphasize the inefficiency of the recruitment mental examination, and the uselessness and positive danger of passing mental defectives and obviously potential psychopaths into the army. Further, it is shown that the proportions of the various disease types among service patients has altered since the war period, and that dementia praecox cases constitute, with mental defectives, by far the greater proportion of cases still under care. The etiologic factors are divided into those existing before the war and those associated with service. Of the former, insane heredity, psychopathic predisposition, previous mental illness, constitutional inferiority (i. e., mental or moral deficiency), syphilis, and excessive alcoholism, together accounted for 99 per cent. of cases when full data were available. An examination of the symptomatology shows that no new type of mental disturbance has been produced by the war, but that certain psychoses (viz., dementia praecox) which in civil life are usually chronically progressive, appeared in an acute, recoverable form. It is evident that the majority of the cases under consideration would eventually have entered mental hospitals even had it not been for the war strain.

Food Poisoning Caused by Bacillus Aertrycke.—Wiseman discusses an outbreak of food poisoning due to the consumption of cow's milk and affecting fifty-two persons of ages ranging from 14 months to 83 years. The actual source of the contamination was not discovered. In this outbreak two distinct types of *B. aertrycke* were found—(*a*) the "mutton" type, and (*b*) one closely approximating, and probably identical with the Newport type. The conception of interagglutinability of the members of the *B. paratyphosus* B food poisoning group is shown to be susceptible of modification.

Japan Medical World, Tokyo

Oct. 15, 1922, **2**, No. 10

*Immunologic Studies of Intestinal Fluids. R. Umemura and M. Yamanouchi.—p. 281.
Mode of Influence of Carbohydrates on Organisms. M. Ohtaki, K. Sukegawa and S. Sawaguchi.—p. 288.
Is Phospholipin a Constituent of Hydrolytic Enzymes? S. Kai.—p. 291.

Immunologic Studies of Intestinal Fluids.—The important points revealed by Umemura and Yamanouchi in their study of the intestinal fluid in search of an explanation of immunity phenomena are: The normal intestinal fluid does not destroy immune bodies. The intestinal fluid of an immunized animal contains agglutinin. This agglutinin appears in the fluid from the third to the fifth day and reaches the maximum from the tenth to the fourteenth day and then gradually decreases. The agglutinin in the intestinal fluid is from one fourth to one sixtieth of that in the circulation. The excretion of immune antibodies in the intestinal fluid has no local differences between duodenum and jejunum or ileum. The agglutinin in the intestinal fluid is specific. The agglutinin in the intestinal fluid has no changes with temperature at 56 C.; at 65 C. it is reduced from one fifth to one half and at 70 C. from one thirty second to one eighth and at from 75 to 80 C. it only remains as a trace or disappears entirely. The intestinal fluid contains bacteriolysin and performs bacteriolytic action in the test tube. The bacteriolytic action takes place in the intestinal canal of an actively immunized animal. The bacteriolysin in the intestinal fluid appears from the third to the fourth day after the injection of antigen and it reaches the maximum on about the fourteenth day and then gradually decreases. The appearances of the antibodies in the intestinal fluid introduced by passive immunity is the same as active immunity. The number of bacteria in the intestine is lowest in the duodenum and increase further down.

Journal of Physiology, London

December, 1922, **57**, Nos. 1 and 2

*Metabolism of Salivary Glands. III. Blood Sugar Metabolism of Submaxillary Gland. G. V. Anrep and R. K. Cannan.—p. 1.
*Id. IV. Metabolism of Reducing Substance of Submaxillary Gland. G. V. Anrep.—p. 7.
Studies in Respiration and Circulation in Cat II. Oxygen in Venous Blood. K. Uyeno and Y. Doi.—p. 14.
*Circulation After Cessation of Work; Calculation of Circulation Rate Experiments According to Nitrous Oxid Method. J. Lindhard.—p. 17.
Seasonal Variation in Reticulated Corpuscles of Amphibian Blood. J. M. D. Scott.—p. 31.
Study of Chlorin Interchange Between Corpuscles and Plasma. L. Dautrebande and H. W. Davies.—p. 36.
Calibration of Reversion Spectroscope for Estimation of Carbon Monoxid in Blood. H. Hartridge.—p. 47.
Visual Acuity and Resolving Power of Eye. H. Hartridge.—p. 52.
Relation Between External Work Produced and Time Occupied in Single Muscular Contraction in Man. H. Lupton.—p. 68.
Measurement of Tension of Oxygen and Carbon Dioxid in Blood of Pulmonary Artery in Man. A. C. Redfield, A. V. Bock and J. C. Meakins.—p. 76.
Concentration of Blood and Effects of Histamin in Suprarenal Insufficiency. C. H. Kellaway and S. J. Cowell.—p. 82.
*Nature of Sugar in Blood. L. B. Winter and W. Smith.—p. 100.

Blood Sugar Metabolism of Salivary Glands.—Anrep and Cannan assert that changes in the blood flow through the submaxillary gland do not affect the consumption of sugar from the blood. Stimulation of the chorda tympani increases the blood sugar consumption. The increase is of the same order as that of the gland secreting under pilocarpin and is broadly proportional to the activity as measured by the rate of secretion. The maximal consumption of sugar corresponds with the maximal secretion and does not occur, as does the oxygen consumption, in the postactive period. Atropin, in doses sufficient to paralyze the secretion, only reduces the effect of the chorda tympani on the sugar consumption. Large doses abolish the effect altogether.

Metabolism of Reducing Substance of Submaxillary.—The resting submaxillary gland yields on acid hydrolysis about 2.3 per cent. of reducing substance calculated as glucose. The ratio reducing substance: total nitrogen in a resting submaxillary gland is about 0.8 per cent. The glands on both sides yield after acid hydrolysis the same absolute amount of reducing substance. The saliva secreted under chorda stimulation becomes gradually poorer in reducing substance. The D/N ratio of the saliva also drops with the extent of secretion. The ratio reducing substance: protein nitrogen is more constant. The variations in the latter indicate the presence in saliva of variable amounts of protein which does not give rise to reducing substance. The submaxillary gland loses the same amount of reducing substance as is secreted in the saliva. There is no evidence of a process of reconstruction of mucin during the secretion under chorda stimulation, as judged by the reduction after acid hydrolysis.

Circulation After Work.—The results of experiments dealing with the oxygen consumption per minute, the oxygen absorption per liter of blood and the pulse rate within the first twenty minutes after cessation of muscular work in two male subjects are given by Lindhard. The minute volume of the heart as calculated from the experimental data shows that the circulation rate decreases rapidly during the first two minutes and then more slowly following a rather complicated curve.

Nature of Sugar in Blood.—A method is described by Winter and Smith for obtaining the sugar of blood in a concentrated solution free from proteins. By means of this it is shown that the sugar in normal blood of man, and of the ox, sheep, cat and rabbit, is an unstable form of glucose, with an initial low rotatory power. It is suggested that the sugar is gamma (γ) glucose. Glucose and fructose, taken in large quantities by mouth, cannot be detected as such in the blood, their conversion into normal blood sugar being very rapid. Nervous influences alter the nature and quantity of the blood sugar. The blood sugar of persons suffering from severe diabetes mellitus is of an abnormal nature. It appears to be the α, β form of glucose. An enzyme is postulated whereby the α, β equilibrium form of glucose is converted into γ glucose. This enzyme is absent from the blood. The absence or inactivation of this enzyme is suggested as the cause of diabetes.

Lancet, London

Jan. 13, 1923, **1**, No. 5185

*Pyloric Stenosis of Infants. L. G. Parsons and S. G. Barling.—p. 59.
*Addison's (Pernicious) Anemia. H. Gilford.—p. 64.
*Secondary Infections Complicating Pulmonary Tuberculosis Among Sanatorium Patients. R. C. Wingfield.—p. 66.
Sulpharsenol in Treatment of Syphilis and Some Complications of Gonorrhea. F. C. Doble.—p. 70.
*Nondiarrheic Type of Celiac Disease: Form of Chronic Fat Indigestion in Children. R. Miller and H. Perkins.—p. 72.
*Injection of Alcohol in Treatment of Prolapse of Rectum in Infancy and Childhood. L. Findlay and F. B. D. Galbraith.—p. 76.
Skin Eruption Due to a Mold (Cercosporella Vexans). C. Russ.—p. 77.
Treatment of Whooping Cough by Lactic Acid Bacillus Preparation. F. Parry.—p. 78.
Chronic Disease of Antrum. T. B. Jobson.—p. 78.
Hemilaryngectomy for Carcinoma. F. Muecke.—p. 78.

Results of Medical and Surgical Treatment of Pyloric Stenosis.—The paper is based on an analysis of ninety-four cases, of which thirty-six were treated by medical means, eight by gastro-enterostomy after failure of medical measures, and fifty by Rammstedt's operation. The results of medical treatment alone were very unsatisfactory. Relief of the obstruction by Rammstedt's operation, preceded and followed by a careful medical regimen, offered the best means of reducing the high mortality of the disease. Rammstedt's operation, in the opinion of Parsons and Barling, allows the redundant mucous membrane to bulge and for a time abolishes the sphincteric activity of the pylorus. Given early diagnosis and this treatment, the authors believe the mortality can be reduced to 20 per cent. Functional test meal examination of the stomach shows high rennin, high free acidity, and high total acidity in the resting juice, delayed emptying, and absence of duodenal regurgitation. Chemical analysis of the stools negatives the suggestion that these patients are suffering from pancreatic insufficiency. This and other evidence the authors assert is opposed to the hyperadrenalism theory of the cause of hypertrophy put forward by Gray, Pirie and Reynolds.

Addison's Pernicious Anemia.—The place which Addison's anemia should hold among diseases, Gilford says, is with

the errors of development. Too early senescence of the red blood organs results in pernicious or Addison's anemia.

Secondary Infections of Pulmonary Tuberculosis.—While he does not advocate the administration of autogenous vaccines in every case of pulmonary tuberculosis in which the character and bacteriology of the sputum lead one to suspect a secondary infection, Wingfield tries to show that there are certain types of cases in which, even under sanatorium conditions, secondary infection of clinical importance can be recognized easily and will respond promptly to autogenous vaccine treatment.

Nondiarrheic Type of Celiac Disease.—A group of children who failed to thrive owing to their inability to absorb fat properly is reported by Miller and Perkins, and the principles of treatment for the condition are discussed. In spite of the absence of diarrhea (in the popular sense of the word), and in spite of the absence of the typical pale, unformed, and offensive celiac stool, these are, nevertheless, cases of celiac disease in a mild form. It is suggested that the group may be conveniently termed the "nondiarrheic or dry form of celiac disease." A stool may contain a large excess of fat (even over 50 per cent.) and yet be formed and colored if the fat in it is chiefly in the form of soaps; whereas, when chiefly in the form of fatty acids, the excess of fat causes the stool to be pale, unformed, and offensive. The soapy stool is found in the nondiarrheic group and the fatty-acid stool in the classical diarrheic form of celiac disease. Recognition of the nondiarrheic group suggests that the diarrheic cases may show considerable naked eye improvement in the stools without there being a return to the normal power of fat absorption—in other words, that during the quiescent and convalescent stages in celiac disease the essential failure in fat absorption will still be recognizable by analysis of the stools. Examples are quoted to prove this point. Its recognition also affords strong evidence against the view that celiac disease is due to an enteritis or that it has any essential connection with intestinal disease. A consideration of the two sorts of stool in celiac disease—the pale fatty acid and the colored soapy stools—leads to the view that the pallor of the classical celiac stool is due not to an absence of bile pigment, but rather to a masking of the pigment by the excess of fat present as fatty acid crystals.

Alcohol Treatment in Prolapse of Rectum.—With the finger in the rectum, to act as a guide, Findlay and Galbraith inject 1.5 c.c. of absolute alcohol on each side into the perirectal tissue at a depth of from 2 to 2½ inches. An ordinary exploring syringe is employed, the needle being inserted on each side about ¼ inch from the anal margin. The needle punctures are sealed with collodion, a pad is placed in the perineum and kept in position by strapping the buttocks firmly together. Instructions are given that the child must move the bowels only while in the recumbent position, the fecal matter escaping by the side of the dressing. The pad and strapping are reapplied daily for a week. Forty-one children have been so treated by the authors. In two cases the operation had to be repeated once, and in one case twice, but in all the other examples only one treatment was necessary to obtain a cure.

Medical Journal of Australia, Sydney

Dec. 23, 1922, **2**, No. 26

The Practice of Medicine. J. Gordon.—p. 725.
Peptic Ulcer. G. P. Dixon.—p. 726.
Use of Antigonococcal Serum in Treatment of Complications of Gonorrhea.—p. 731.
Case of Pernicious Anemia with Early Spinal Symptoms. C. B. Blackburn. With Pathological Report. O. Latham.—p. 735.

Dec. 30, 1922, **2**, No. 27

Suggested Amendments of Public Health Legislation in Queensland. A. G. Butler, E. S. Meyers, J. V. Duhig and S. F. McDonald, Queensland.—p. 757.
Case of Hemorrhage in Newly Born. W. R. Groves.—p. 762.

Medical Journal of South Africa, Johannesburg

December, 1922, **18**, No. 5

Sterility. E. R. Snyman.—p. 113.
Analysis of 4,656 Post-Mortem Examinations Held at Government Mortuary, Johannesburg. J. J. Levin.—p. 119.

Bulletins de la Société Médicale des Hôpitaux, Paris

Dec. 22, 1922, **46**, No. 37

Insufficiency from Fenestrated Pulmonary Valve. E. Barie.—p. 1735.
*Auto-Injections in Post-Encephalitis Syndromes. A. Souques.—p. 1736.
*Paroxysmal Hemoglobinuria from Chilling. Roch and A. Liengme.—p. 1737.
*Cerebrospinal Meningitis in Infants. Chevrel.—p. 1742.
*Artificial Pneumothorax with Adhesions. Ameuille and Jullien.—p. 1747.
*Hirsutism in a Boy. E. Apert et al.—p. 1750.
Non-Familial Myoclonic Epilepsy. J. A. Sicard and J. Lermoyez.—p. 1753.
*Tyrosin Test for Tuberculosis. A. Pissavy and R. Monceaux.—p. 1756.
Bismuth Medication in Specific Aortitis. Laubry and Bordet.—p. 1760.
*Contamination of Offspring by Hereditary Syphilitic. M. Pinard.—p. 1769.

Intravenous Injections of Cerebrospinal Fluid in Parkinsonian Postencephalitic Syndromes.—Souques had no results with the treatment of parkinsonian postencephalitic syndromes with intravenous autoinjections of cerebrospinal fluid as recommended by Piticariu. Sicard added similar negative experiences in the debate.

Paroxysmal Hemoglobinuria Provoked by Cold.—Roch and Liengme describe a case of paroxysmal hemoglobinuria with attacks provoked by cold and by an intravenous injection of a very small amount of casein (5 cg.). Although the Donath-Landsteiner test was positive, the patient had a negative Wassermann test, and hemoglobin was not found in the serum in any of his attacks. The attacks appeared later than in typical cases, and lasted much longer than usual (ten to fifteen days).

Cerebrospinal Meningitis Due to Pseudomeningococcus.—Chevrel observed in infants two cases of cerebrospinal meningitis due to *Diplococcus crassus* and two to *Diplococcus siccus*. These affections are very severe and their diagnosis can be made only by cultivation. Most of these pseudomeningococci are gram-negative and some are agglutinated by the antimeningococcus B serum.

Artificial Pneumothorax with Adhesion of the Layers of the Pleura.—Ameuille and Jullien report the case of a woman in whom all the clinical and roentgenologic symptoms suggested adhesion of the layers of the pleura (fifteen year old pulmonary lesions, condensation of the left lung, and retraction of the base of the thorax). Yet pneumothorax was possible, and materially improved the patient's condition.

Hirsutism in a Twelve Year Old Boy.—Apert, Stevenin and Broca publish a case of extreme hirsutism in a boy, aged 12. The intelligence and behavior were those of an adult. His pulse, respiratory rhythm and blood pressure corresponded also to those of an adult. The most interesting finding was in basal metabolism, which was too low for a child of his age and proportions, but perfectly normal for adults. Although he was fat and small, pituitary treatment was without good results and caused a further increase in weight. The examination of his basal metabolism led to the administration of thyroid, which seemed to work better.

Tyrosin Reaction in Diagnosis of Tuberculosis.—Pissavy and Monceaux report further good results in fifty-two experiments with the reaction for tyrosin in tuberculous sputum. The reaction was only twice negative in patients with tubercle bacilli in the sputum. On the other hand, one case gave the reaction almost six months before the appearance of bacilli. The reagent which they use deteriorates very easily. They give details of the technic.

Contamination of Wife and Child by Hereditary Syphilitic.—Pinard reports a case of probable hereditary syphilis. The wife and child, although without actual symptoms, have also a positive Wassermann.

Médecine, Paris

December, 1922, **4**, No. 3

Hygiene and Infectious Diseases in 1922. L. Tanon.—p. 165.
*Feeding in Acute Diseases. M. Labbé.—p. 176.
*Treatment of Infectious Diseases. H. Dufour.—p. 181.
*Persistence of Malaria Parasites. J. Rieux.—p. 187.
Hygiene in Infectious Diseases. G. Reynaud.—p. 192.
*Internal Mycoses. P. Sée.—p. 197.
*Masked Forms of Intestinal Amebiasis. F. Moutier.—p. 199.
*Typhoid Fever. P. Hébert and M. Bloch.—p. 205.
*Primary Symptoms of Measles and Scarlet Fever. Piédelièvre.—p. 210.
Arsphenamin Treatment of Pulmonary Gangrene. M. Perrin.—p. 215.

Treatment of Epidemic Encephalitis. J. Jumentié.—p. 221.
*Complement Fixation in Tuberculosis. J. Paraf.—p. 224.
Intravenous Injections of Sodium Salicylate in Acute Articular Rheumatism. R. Lutembacher.—p. 228.
Typhoid Fever and Autovaccines. R. Dubarry.—p. 229.
Bacilli in Diphtheric Membranes. A. Baranger.—p. 233.
Treatment of Malaria. P. Lassablière.—p. 235.

Nutrition in Acute Diseases.—Labbé recommends a diet rich in albumin to restore the proteins lost by the increased metabolism. The elimination of toxic substances should be aided by large amounts of fluid.

Treatment of Infectious Diseases by Shock, Fixation Abscess and Vaccine Therapy.—Dufour finds these methods useless and dangerous in the first stage of infectious diseases. If the disease continues and is too severe or too protracted, such treatment is justified, as well as in the later stages.

Evolution of Malaria.—Rieux believes that disappearance of the parasite from the blood of patients, which is usual after a year, signifies recovery. The attacks of fever, which may occur later are rather due to other diseases or sequelae of malaria, and not to its manifestations.

Internal Mycoses.—Sée draws the attention to internal mycoses, especially aspergillosis and oidiomycosis, which may clinically resemble tuberculosis of lungs. These affections can be cured with iodids.

Hidden Forms of Intestinal Amebiasis.—Moutier advises systematic examination of the stools for dysenteric amebas. Any enteritis, colitis or proctitis may be due to them.

Typhoid Fever.—Hébert and Bloch's statistics show a very good influence of vaccination on morbidity and mortality.

Diagnostic Value of Primary Signs of Measles and Scarlet Fever.—Piédelièvre considers Koplik's spots as a pathognomonic sign of measles. Careful examination may reveal them more than a week before the general exanthem. In the diagnosis of scarlet fever, a low blood pressure and a distinct enlargement of the spleen may aid. Schultz and Charlton's extinction sign is constant, but almost useless for the early diagnosis.

Complement Fixation in Tuberculosis.—Paraf points out the specificity of the reaction. It is not positive in all cases of active tuberculosis, and this applies especially to the early stages and to tuberculosis of organs other than the lungs.

Paris Médical

Dec. 23, 1922, **12**, No. 51. Pasteur Number

Republication of Pasteur's Four Revolutionary Articles, 1861-1884.—pp. 561-584.

Dec. 30, 1922, **12**, No. 52

*Forms of Uric Acid in the Blood. M. P. Weil and Guillaumin.—p. 585.
Functional Heart Murmurs in Children. G. Blechmann.—p. 588.
*Recent Research on Causes of Rachitis. E. Pichon.—p. 595.

Various Forms of Uric Acid in the Blood.—Weil and Guillaumin distinguish between the "total uric acid" of the blood and the free uric acid with its salts. The usual methods give only the value of the latter. The other part of the "total uric acid" consists of more or less complete remnants of nucleotids. Some of them give some reactions of uric acid (combined uric acid). In others, hydrolysis of the plasma after removal of albumin has to precede the reaction (uricogenous compounds). Their determination is still in the experimental stage. The uric acid of the plasma belongs almost exclusively to the free group. The combined uric acid is practically limited to the corpuscles, which contain also some free uric acid. A method of determination is given.

Recent American and English Research on Causes of Rachitis.—Pichon reviews some new American and English researches on rachitis.

Progrès Médical, Paris

Jan. 6, 1923, **38**, No. 1

*Prophylaxis of Inherited Syphilis. Vignes and Galliot.—p. 1.
Mineral Water Treatment of Genito-Urinary Affections. Legueu.—p. 3.
*Relation of Heart Disease to Pregnancy. P. Hermet.—p. 4.

Prophylaxis of Inherited Syphilis in Paris Lying-in-Hospitals.—Vignes and Galliot report good results in prophylaxis in maternity hospitals in Paris, and describe the treatment given to adults and the new-born.

Heart Disease and Pregnancy.—Hermet reviews the opinions of American authors on the subject of heart disease and pregnancy (Pardee, Lambert, Bishop, Neuhof).

Schweizerische medizinische Wochenschrift, Basel

Dec. 28, 1922, **52**, No. 49-50

*Leukorrhea. W. Bigler.—p. 1193.
*Functional Treatment of Dysmenorrhea. F. Ludwig.—p. 1198.
Neuroma-Like Formations in Obliterated Appendices. Schweizer.—p. 1202.
Traumatic Rupture of Diaphragm in Congenital Diaphragmatic Hernia. G. G. Moppert.—p. 1205.
Psychology of Treatment of Neurosis. A. v. Muralt.—p. 1207.
Paroxysmal Pseudohemoglobinuria. T. and J. Stephani.—p. 1209.
Action of Bile Acids on Heart. A. Tappolet.—p. 1210.
*Increasing the Coagulability of Blood. P. F. Nigst.—p. 1211. Conc'n.
*Volume of Blood in Pregnancy. E. Gueissaz and F. Wanner.—p. 1216.

Etiology and Treatment of Leukorrhea.—Bigler limits his paper to the nonspecific fluor. It originates only in the vagina or cervix, never in the body of the uterus. Although admitting that a normal secretion usually corresponds to a low bacterial content, he finds that there are no direct relations with high bacterial contents. One has to assume an endogenous factor—a readiness to inflammation. A nonspecific secretion of this kind is very often only the external manifestation of an internal change: endocrines, especially the ovary. Acute and chronic general infections, diseases of blood and metabolism, and constitutional anomalies, like infantilism and status lymphaticus or hypoplasticus, are frequent causes. Bactericidal powers of the vaginal epithelium and of the blood are important protecting factors against leukorrhea. Evidences of vagotonia are common in the condition, and irritability of the vagus nerve may be the cause of a hypersecretion, especially from the cervix.

Functional Treatment of Dysmenorrhea.—Ludwig surveys the theories, and accepts dysmenorrhea as a disturbance of the tonus of the uterus. Substances paralyzing the tonus have a favorable influence.

Increasing the Coagulability of the Blood.—This is the last of a series of articles. Nigst points out that the bleeding is not a direct function of the coagulability of blood. Measures which lead to an increase in the blood coagulability in vitro, like application of roentgen rays on the spleen, have no practical value for surgical hemostasis. Local application of hemostatics may be useful, but only the classic surgical methods are reliable. An extensive survey of the literature is given.

The Total Volume of Blood in Pregnant Women.—Gueissaz and Wanner computed the volume of blood in ten nonpregnant and twelve pregnant women, and seven women after delivery. They used a combination of de Crinis and Löwy's methods (injections of glucose solution and refractometry of the serum). They found an increase in the blood volume of 15 per cent. in the pregnant.

Dec. 30, 1922, **52**, No. 51-52

*Wildbolz' Reaction. R. Kipfer.—p. 1241.
*Transvestitism. R. Bing and S. Schönberg.—p. 1254.
*Sugar Metabolism. A. Gigon.—p. 1258.
Syphilis-Like Affection of the Nail Due to Bacillus Fusiformis. M. Tièche.—p. 1259.
*Parathyreoprival Tetany. M. Greppin.—p. 1260.
*Sweating from Standpoint of Loss of Energy. M. E. Bircher.—p. 1265.
*Agglutination for Typhoid in Cholelithiasis. C. W. Jungeblut.—p. 1269.
Reaction and Amount of Urine. A. Staehelin.—p. 1271.

Wildbolz' Urine Reaction.—Kipfer gives details of the technic, a report on 200 cases, and a survey of the literature on 2,300 cases. He considers the reaction a valuable adjuvant in the diagnosis of tuberculosis. He points out that negative clinical findings are not an absolute scientific proof that there is no tuberculosis.

Transvestitism.—Bing and Schönberg publish four cases of pronounced transvestitism—insistence on dressing in the clothes of the opposite sex. One of the men used boyish clothes.

Sugar Metabolism.—Gigon does not believe that the free blood sugar has a direct action in the glucose metabolism It has perhaps some importance for the protein metabolism.

He supposes that the greatest part of the circulating sugar is bound to nitrogenous compounds.

Case of Parathyreoprival Tetany, with Formation of Cataract, and Transplantation of Parathyroids.—Greppin discusses especially the relation of the cataract to the tetany, and gives the literature on the subject, including treatment by transplantation of parathyroids.

Sweating from Standpoint of Loss of Energy.—Bircher produced sweating in twenty persons by heat and light. The oxygen consumption increased 13 per cent. over the basal rate, and the temperature of the body about 1 degree C. The increased metabolism lasted longer than the sweating.

Agglutination for Typhoid in Cholelithiasis.—Jungeblut examined seventeen patients with cholelithiasis. Agglutination of typhoid bacilli was positive only in two cases and of dysentery bacilli in two, together with agglutination of the colon bacillus.

Annali Italiani di Chirurgia, Naples

Dec. 20, 1922, **1**, No. 10-12

*Sarcoma of Kidney and Vagina in Infant. G. Roello.—p. 743.
Malarial Splenomegaly in Sardinia. F. Putzu.—p. 767.
*Perforated Gastric Ulcer. F. Niosi.—p. 866.
War Wounds of Skull and Brain. M. Sbrozzi.—p. 904. Cont'd.
Transactions of Italian Surgical Congress.—pp. 926-992.

Sarcomas in an Infant.—A pedunculated sarcoma in the vagina grew rapidly again after repeated resection, and necropsy at the age of 8 months showed a sarcomatous tumor in both kidneys. Roello says that this is the seventeenth case on record of primary bilateral blastomas in children.

Perforated Gastric Ulcer.—Only two of the patients were women in Niosi's twelve cases. The age ranged from 18 to 60, and the onset of symptoms was sudden and stormy. In two of the cases the perforation was the first indication of the presence of an ulcer. The sudden intense pain persisted for three or five days before it became relieved. In one case the pain subsided completely, nothing but moderate tenderness in the epigastrium remaining of the severe symptoms that had suggested perforation. There was no history of previous stomach disturbances, and the man had leaped across a ditch just before his sudden pain. Niosi operated with considerable hesitation until the perforation came into view. In another case the man remained at work, and ate beans for supper. The interval in his case was thirty hours, and necropsy two days after the operation revealed a second perforation.

Biochimica e Terapia Sperimentale, Milan

Dec. 31, 1922, **9**, No. 12

*Color of Blood After Carbon Monoxid. G. Benassi.—p. 357.
Clinical Tests for Urobilin. E. Tarantola.—p. 364.

Color of Blood After Carbon Monoxid.—Benassi admits that although the light red color of blood stains in persons dead from carbon monoxid poisoning is important, yet the absence of the color does not disprove at all the possibility of a great part of the hemoglobin being bound with carbon monoxid.

Policlinico, Rome

Jan. 1, 1923, **30**, No. 1

*Inversion in Epidemic Encephalitis. G. Sabatini.—p. 2.
Two Cases of Pernicious Anemia. F. Grego.—p. 7.
*Oral Affections in Pregnancy. G. B. Poletti.—p. 13.

Inversion Phenomena in Encephalitis.—Sabatini reports two cases of inversion of the daily cycle of activity after encephalitis. One of the patients with a parkinsonian syndrome was perfectly dull during the day, but was able to do fine work in the late evening. He points out that the insomnia of some encephalitic children with agitation is a similar phenomenon. Interesting examples of differences in the writing of the patients in the forenoon and at night are given. The morning samples show many pathologic changes; one subject needed three times the time to copy that was sufficient at night.

Oral Affections in Pregnancy.—Poletti discusses the affections of the mouth in pregnancy and puerperium. Pregnancy probably causes or perhaps aggravates different affections of the mouth (gingivitis, caries of teeth). These disturbances seem to depend on alterations of the internal secretion (ovary, thyroid, parathyroid, posterior pituitary). Organotherapy may give good results.

Jan. 1, 1923, **30**, Medical Section No. 1

*Ulcerous Typhoid Aortitis. E. Marchiafava and A. Nazari.—p. 1.
*Weisz' Reaction in Typhoid. G. Salmoni.—p. 8.
*Prophylaxis of Pertussis with Vaccines. L. Auricchio.—p. 25.
*Gases of the Blood. T. de Sanctis-Monaldi.—p. 33.

Ulcerous Typhoid Aortitis.—Marchiafava and Nazari give a clinical and pathologic account of the rare affection which caused the death of Take Jonesco. The famous Roumanian politician became ill nine days after eating two oysters in Naples. The typhoid fever started rather mildly, but on the fifty-second day the temperature increased. At the same time the patient suffered pains in the anterior inferior part of the abdomen, more to the left side. They increased during movements and defecation. Later the pain irradiated to the pubic and iliac regions, and remained till the end, which occurred suddenly, with symptoms suggesting internal hemorrhage, on the eighty-ninth day. A blood culture taken sixteen days before death was negative. The necropsy revealed arteriosclerosis of the aorta with a typhoid ulcer about 1 cm. proximal to the iliac vessels. The defect led into an aneurysm of the size of a small hen's egg, perforation of which had caused a retroperitoneal hematoma. This explained the clinical findings of an inferior abdominal angina.

Weisz' Reaction in Typhoid.—Salmoni used Weisz' reaction with permanganate in 1354 different cases, 360 of which belonged to the typhoid group, 300 were tuberculous. He found it very constant in typhoid fever. It appears earlier than agglutinins, is more simple and constant than the diazo-reaction, besides being independent of the drugs taken by the patient. It is negative in the first two stages of tuberculosis, but practically constant in the third. The reaction is due to some substances which are present only in pathologic states. It is to be considered positive only if the color is really a golden or canary yellow and if it persists, because a similar color caused by the presence of urobilin disappears in a few minutes.

Vaccine Prophylaxis of Whooping Cough.—Auricchio used a vaccine prepared from four strains of the Bordet-Gengou bacillus in forty cases which were exposed to infection in the family. Thirty-eight of these remained healthy, and only two who were vaccinated during the incubation phase showed slight symptoms of the disease. He made within six days three injections of 2 and 3 c.c. of a vaccine containing 2 billions of germs per 1 c.c. He examined in ten cases the progress of immunization by repeated agglutination, complement fixation (which he calls the Wassermann reaction), and opsonin tests. All of them showed the efficacy of the treatment.

Gases of the Blood.—De Sanctis-Monaldi reviews the gases of the blood, especially in relation to acidosis.

Tumori, Rome

Dec. 25, 1922, **9**, No. 3

Blood Vessels in Experimental Tumors. S. Dentici.—p. 249.
*Chronic Inflammation and Experimental Tumors. G. d'Agata.—p. 263.
Cancer in Wolffian Region. E. Gioja.—p. 278.
*Dercum's Disease and Multiple Lipomatosis. G. Goglia.—p. 318.
*Lymphosarcoma of Pharynx. G. Ferreri.—p. 333.
*Fibrosarcoma of the Tongue. R. Brancati.—p. 356.

Chronic Inflammation and Experimental Tumors.—D'Agata inoculated mice with cancer and with the sporothrix, together or separately. The two processes, the cancer and the chronic inflammation, developed separately even in the same organ. When the cancer was not inoculated until there was an intense peritoneal reaction to the inoculated inflammation, the cancer did not take.

Adiposis Dolorosa and Multiple Nodular Lipomatosis.—Goglia's data confirm the anatomic similarity between these two affections, while reaffirming the absolutely different clinical course and prognosis. The asthenia in Dercum's disease is physical, psychic and cardiovascular. There may even be hallucinations and tachycardia. The onset may be almost like an explosion. It resembles the attack of gout to such

an extent as to suggest that the fat is deposited in the subcutaneous tissue to form adipose tophi in the same way that the urates are deposited in cartilage to form gouty tophi. In the five cases described, one was typical Dercum's disease, three were ordinary multiple lipomatosis, and the fifth case was evidently a transitional form between the two. His review shows that Dercum's disease mainly affects women while ordinary lipomatosis affects men. Long survival is rare with adiposis dolorosa.

Lymphosarcoma of Pharynx.—Deep roentgen-ray treatment was applied in Ferreri's three cases, and the two men were apparently entirely cured. They have had no return of disturbance during the months since. One woman died. The sarcoma was in a tonsil in this case. Swelling of glands in the neck was the first symptom, and the tumor in the tonsil developed rapidly in less than three months from the first symptoms. The lymphosarcoma retrogressed also in this case after the cross-fire exposure to one third of an erythema dose. By the third day the aspect was almost normal, but the patient died from acute marasmus. The symptoms indicated intense intoxication. Necropsy revealed metastasis in the spleen although to the eye it seemed normal.

Fibrosarcoma of the Tongue.—The tumor had been noticed for six months. It occupied the tip of the tongue in a boy, aged 17. The whole tip of the tongue was resected under local anesthesia. Brancati advocates resection of the entire tongue in case of rapidly growing sarcoma.

Brazil-Medico, Rio de Janeiro

Dec. 9, 1922, **2**, No. 49

*Mycosis Associated with Leishmaniasis. F. Terra et al.—p. 363.
Necropsy Findings in Case of Syringomyelia. M. Couto Filho.—p. 368.
Uranotenia Mosquitoes. A. Neiva and C. Pinto.—p. 374.

Associated Leishmaniasis and Mycosis.—One leg from hip to toes was scattered thickly with ulcerated nodules, which proved to be due to two distinct processes, cutaneous leishmaniasis and a dermatitis from which the acrotheca was cultivated. The term chromoblastomycosis is suggested as a descriptive title.

Dec. 16, 1922, **2**, No. 50

*Prophylaxis of Syphilis in Infants. A. Pedro.—p. 381.
*Suppurating Cholecystitis. R. da Silva.—p. 383.
*Spontaneous Cure of Cataract. J. Santa Cecilia.—p. 385.
Flagellate Parasites of Birds. A. Marques da Cunha and J. Muniz.—p. 386.
Treatment of Fetid Bronchitis. G. do Couto e Silva.—p. 388.

To Ward Off Syphilis in the Offspring.—Pedro emphasizes the necessity for mercurial treatment of all pregnant syphilitic women. He reiterates that systematic treatment all through the pregnancy is imperative, and that it is harmless, whatever the woman's condition. He injects the mercury in a muscle or by the vein, regardless of the Wassermann reaction. The results in years of this treatment have confirmed that it protects the fetus against spirochetes, and allows its normal development and growth after birth. He reports a number of instances in which healthy children were born under systematic mercurial treatment while the same women bore deformed children in previous or subsequent pregnancies without the mercury. Treatment of the father has no influence on the offspring.

Treatment of Acute Purulent Cholecystitis.—The young woman seemed to be moribund from the intense peritoneal reaction to acute suppurating gallbladder disease. She was weak from a childbirth a month before, followed by influenza. Ribeiro da Silva merely broke up adhesions and aspirated about 40 gm. of the purulent contents of the gallbladder by capillary puncture, which revealed streptococci. Recovery was prompt and complete. Cholecystectomy later proved unnecessary.

Spontaneous Cure of Cataract.—The man had been blind from bilateral cataract for twelve years when sudden improvement was observed in the right eye. For seven years since, to date, he has been able to distinguish movements of the hand at 1 meter. The papilla shows glaucomatous excavation. The milky cataract must have ruptured the capsule and been absorbed. Santa Cecilia states that there are about eighty cases on record of reabsorption of an overripe cataract.

Dec. 23, 1922, **2**, No. 51

*Etiologi of Beriberi. C. Fraga.—p. 395.
*Gummatous Lymphomas. O. Clark.—p. 400.
New Species of Blood-Sucking Insect. A. Neiva and C. Pinto.—p. 402.
*The Bone Marrow in Immunization. C. Magarinos Torres.—p. 403.

Etiology of Beriberi.—Fraga presents evidence to sustain his conviction that beriberi—in Brazil, at least—is an infectious disease and not a deficiency disease. A one-sided or oversterilized diet may afford a predisposition, but this alone will not induce beriberi. He describes the clinical picture in three cases under close supervision from the very first symptoms. Two in this group were medical students. The onset was always that of an acute infectious disease. The polyneuritis developed about the fifth day. The acute infectious onset is generally ascribed to influenza or something else, and the connection with the polyneuritis escapes notice. He cites two groups of nine convicts each in the penitentiary at Bahia who volunteered for experiments on promise of release. They were fed on hulled or sterilized rice or other deficient diet for a month or six weeks, but none developed polyneuritis. He adds that perhaps the strongest argument in favor of the infectious origin of beriberi is the success of treatment with arsenicals. At the Bahia insane asylum, Barreto Praguer has had most encouraging results with neo-arsphenamin. In a recent epidemic of beriberi, cure under neo-arsphenamin was comparatively rapid. If a deficiency diet were alone responsible, how could this benefit from arsenical treatment be explained?

Gummatous Lymphomas.—Clark urges tentative treatment for syphilis before accepting the diagnosis of lymphosarcoma. In two cases described the lymphomas melted rapidly under specific treatment. In one case futile operations had already been performed on the huge lymphomas in both inguinal regions.

The Bone Marrow in the Course of the Immunization Process.—During the last two years Magarinos Torres found decided changes in the bone marrow of rabbits which were being utilized for production of agglutinins. The changes in the bone marrow seemed to parallel the curve of agglutinin production. The action of the antigen, the leukocytosis, and the production of antibodies all make demands on the bone marrow.

Medicina Contemporanea, Lisbon

Aug. 20, 1922, **40**, No. 34

*Bilharziasis in Portugal. C. Franca.—p. 265. Conc'n.

Bilharziasis in Portugal.—Franca relates that not until 1921 were any autochthonous cases of bilharziasis known in Portugal but in that year and since a number of cases were found. The majority were in a single focus, the bay of Atalaia, in which the women of the neighborhood were accustomed to wash clothing, standing in the water. A mission from the Lisbon Bacteriologic Institute found that a thermal spring in this bay kept the water warmer than elsewhere, averaging 25.5 C. This explained the survival of the bilharzia in molluscs, and rendered improbable the spread of the focus. A number of works have been published on this endemic bilharziasis in the last two years, describing research on the intermediate hosts as well as the clinical cases, and the action of antimony tartrate. Besides Franca, Bettencourt, Machado d'Almeida and Pereira da Silva have been investigating indigenous bilharziasis. In twenty-three cases, complement fixation tests were positive only in six. Treatment with antimony tartrate proved effectual, but the correct dosage, Franca says, is still a question.

Revista Médica del Rosario, Argentina

November-December, 1922, **12**, No. 6

*Blocking the Splanchnic Nerves. P. L. Mirizzi.—p. 347.
Anguillula Stercoralis in Stools of Young Man. R. Barralt.—p. 381.
*Spontaneous Meningeal Hemorrhage. T. Fracassi.—p. 395.

Splanchnic Regional Anesthesia.—Mirizzi applied on seventeen cadavers the various technics that have been proposed for blocking the splanchnic nerves. He injected a solution of methylene blue. With the Kappis technic, the diffusion of the anesthetic showed that the analgesia would probably have been complete in 80 per cent. of the subjects. With Braun's technic, the proportion was still higher, 100 per cent. The

details of thirty-two clinical cases in which the Kappis method was used on the right side are tabulated, and compared with what others have published, citing over 411 cases. In Mirizzi's cases the analgesia was satisfactory in 88.46 per cent. The duration of the analgesia was two and a half hours in two cases tested. The cases in which the anesthetic had to be supplemented by other means were in nervous or obese patients, or the site of the lesion had not been accurately diagnosed beforehand.

Spontaneous Meningeal Hemorrhage.—Fracassi reports eight cases in adults, encountered in two years. The diagnosis is almost impossible without lumbar puncture. In two of his cases treatment for epidemic meningitis had been given. The sudden onset in the midst of apparent health is the most striking feature of this "meningeal epistaxis" or "meningeal hemoptysis," as it has been called. Sudden convulsions or coma open the clinical picture, but there is no frank hemiplegia, and if the hemorrhage stops, the symptoms gradually subside in a week or two, or the hemorrhage may return. Treatment is that for cerebral hemorrhage in general, supplemented by injections of normal horse serum to promote coagulation. Lumbar puncture should not be repeated, as a rule, because reducing the pressure may favor recurrence of the hemorrhage. One patient has survived three attacks at long intervals; others died at the first or second attack. The mortality was 25 per cent.; the age ranged from 33 to 56, except one girl of 19. Complete coma was the first symptom in this girl, with bilateral Babinski but no other symptoms until the second day of the coma when there was slight stiffness of the neck. The coma continued with temperature of 37.5 C. for twenty days, with slow final recovery. The other patients were all men.

Revista Médica del Uruguay, Montevideo

November, 1922, **25**, No. 11

Aid for Unmarried Mothers. A. Turenne.—p. 785.
*Hereditary Ataxia. A. Isola and H. Artucio.—p. 795.
*Pernicious Anemia in Purpura. C. Bordoni Posse and R. Rinaldi Guerra.—p. 798.
Dysentery from Lambliasis. Justo F. González.—p. 802.
Lambliasis in a Boy. Camilo Payssé.—p. 806.
*Leprosy in Uruguay. José Brito Foresti.—p. 808.
Tetanus Fatal in One Day. E. Portu Pereyra.—p. 842.

Hereditary Ataxia.—The ataxia developed at the age of 8. It was of the true hereditary type although no other cases were known in the family. As the girl grew up, certain symptoms suggested optic neuritis from a brain tumor, but the edematous pseudoneuritis subsided after proper lenses had been prescribed.

Pernicious Anemia and Purpura.—Anemia of pernicious type developed in the course of a month in purpura of eleven months' standing. The man lived on a sailing vessel, and the unbalanced diet was evidently responsible for the disturbances. The authors suggest that in all cases of pernicious anemia it is wise to seek for deficiencies in diet.

Leprosy in Uruguay.—Brito Foresti states in this official report that there are 197 known cases of leprosy in Uruguay. This is a minimal proportion of one case to 7,500 inhabitants—about the same as in Norway. The principal complications in the cases he has encountered are acute nephritis and tuberculosis.

Archiv für klinische Chirurgie, Berlin

Dec. 23, 1922, **122**, No. 2

*Camphor-Phenol in Treatment of Joints. A. Hedri.—p. 281.
*Osteomyelitis of Ribs. F. Michelsson.—p. 314.
*Reconstruction of Jaw and Chin. A. Eiselsberg and H. Pichler.—p. 337.
*The Urochromogen Reaction. M. Flesch-Thebesius and B. Lion.—p. 370.
*Foreign Bodies in Esophagus. H. Killian.—p. 382.
*Preparedness of the Stomach for Ulcer. L. Moszkowicz.—p. 444.
Cardiolysis After Gunshot Wound of the Pericardium. R. Strebel.—p. 500.
*Drainage After Goiter Operations. J. Ujhelyi.—p. 522.
*Prophylaxis of Peptic Ulcer. Haberer.—p. 534.
*Complications with Artificial Esophagus. C. Hirschmann.—p. 553.

Action of Camphor and Phenol in Joints.—Hedri writes from Payr's service to extol the results from filling the capsule of a joint with Chlumsky's mixture of 30 parts liquid phenol; 60 parts pulverized camphor, and 10 parts alcohol. In 20 rabbits, 39 joints, injected with 1, 2 or 3 c.c., showed no sign of injury at the time or later. None of the 7 clinical cases given preventive camphor-phenol treatment developed suppuration. The 12 cases with existing suppuration were all favorably influenced, and nothing suggesting arthritis deformans has developed. Thirty-three illustrations and a bibliography accompany the article.

Primary Infectious Osteomyelitis of Ribs.—Michelsson states that the lesion was in the ribs only in sixteen of the total 1,008 cases of osteomyelitis at the Riga clinic. The cases compiled from the literature bring the total to eighty. Spontaneous recovery is highly improbable, but early operative treatment offers every prospect of a permanent cure.

Reconstruction of Jaw and Chin.—This profusely illustrated article reports excellent results when a double pedicled flap from the scalp is drawn down like a cap band to cover the chin. The part of the flap extending on the brow is used for the lining of the lower lip.

The Urochromogen Reaction in the Urine.—In four cases of fatal surgical tuberculosis the urochromogen reaction had been positive. It veered to positive in time in all cases with unfavorable course, while in all cases improving or cured, the reaction was constantly negative or became negative sooner or later. Study of 100 cases indicates that the reaction must be supervised for months to be really instructive. None of the patients with a negative reaction died. The test is applied to fresh night urine; 8 c.c. is mixed with three volumes of hydrant water and half is poured into another reagent glass. Then 2 or 3 drops of the 1:1,000 solution of potassium permanganate are added to one of the glasses. A canary yellow tint at the end of an hour is a positive reaction.

Foreign Bodies in Esophagus.—Killian refers to cases with various complications. In 380 operative cases the mortality was 21.3 per cent., but the mortality increased with complications. He discusses the indications for operative treatment, and emphasizes the importance of the after-care.

Preparedness of the Stomach for Ulcer.—Moszkowicz' photomicrograms confirm the histologic anomalies which are evidently a factor in gastric ulcer.

Drainage After Goiter Operations.—Ujhelji writes from Bier's surgical service to denounce drainage after operations on the thyroid. He declares it is an unnecessary evil.

Prophylaxis of Postoperative Peptic Ulcer.—Haberer argues that no technic guarantees against peptic ulcer, but resection by the Billroth I method has the best record in this line to date.

Reconstruction of the Esophagus.—Hirschmann's seventeen illustrations show the various complications liable with an extrathoracic esophagus, and the means to avoid and correct them.

Deutsche medizinische Wochenschrift, Berlin

Dec. 29, 1922, **48**, No. 52

*Uremia. H. Strauss.—p. 1719.
Urinary Calculi. F. Voelcker.—p. 1721.
*Results of War Amputations and Prostheses. F. Lotsch.—p. 1723.
*Treatment of Peritonitis with Ether. C. Stieda.—p. 1725.
Coxitis and Spontaneous Luxation in Influenza. Ochsenius.—p. 1726.
Habitual Vomiting of Infants. A. Dollinger.—p. 1726.
*Prophylaxis of Puerperal Fever. H. Kritzler.—p. 1726.
Anaphylaxis in Protein Treatment. Neumann-Spengel.—p. 1727.
*Carcinomas of Colon. L. Kuttner.—p. 1727.
Bleeding and Tamponade of Nose. Finder.—p. 1729.
Niessen's Bacillus of Smallpox. H. A. Gins.—p. 1730.

Uremia.—Strauss gives a short survey of the two different forms of uremia (eclamptic and true uremia), and mentions also the vascular syndromes. The treatment of true uremia consists in large venesections and treatment of the heart. If the patient is unable to retain fluids, intravenous infusions of 200 c.c. of a 20 per cent. solution of glucose, or in enemas, are valuable. In eclamptic forms, the heart is also important. Narcotics are valuable, lumbar puncture relieves the patient, and large venesections should never be omitted. Rest is essential. Decapsulation of kidneys is to be recommended when a suburemic condition develops in marked oliguria.

Results of War Amputations and Use of Prostheses.—Lotsch reviews the results of different methods. Very few

stumps are capable of bearing the whole weight of the body. The main point to be considered now is the adaptability to an intended prosthesis. The greatest part of the weight rests usually on the condyles of the tibia or the tuber ischii, and the rest of the extremity serves simply as a lever.

Treatment of Peritonitis with Ether.—Stieda used from 100 to 150 c.c. of ether in sixty-four cases of perforation peritonitis following appendicitis. A diffuse peritonitis was present in twenty-seven of these patients, eight of whom died. He poured the ether into the abdominal cavity, and always drained.

Prophylaxis of Puerperal Fever.—Kritzler points to the danger of infection to which wives of men with suppurating fistulas after wounds are exposed.

Carcinomas of Colon.—Kuttner deals with diagnosis and treatment of carcinomas of the colon. The symptoms are different according to the form and size of the tumor. Some patients have only cachexia. Fever, which occurs sometimes, misleads often to a diagnosis of tuberculosis of bronchial or mesenteric glands. In other cases no cachexia is present. Irregular movements of bowels should always lead to careful examination. Constipation is very suspicious, but diarrhea, especially when putrefactive, may be also a symptom. Paroxysmal pains are characteristic. Occult bleeding is most important, although there may be long periods without bleeding. Examination of the rectum should be made after emptying the bladder. Endoscopy of the rectum and sigmoid flexure is absolutely indicated in every persistent constipation. Roentgen rays indicate the seat of the disease, but only rarely the kind. If the examination is negative and the suspicion strong, laparotomy should be tried. An early radical operation is the only way to cure. Roentgen rays are useful only before and after operation.

Klinische Wochenschrift, Berlin

Dec. 16, 1922, **1**, No. 51

*Origin of Urobilinogen. A. Adler.—p. 2505.
*Balneology and Pharmacology. J. Markwalder.—p. 2507.
*Surgery in Acute and Subacute Liver Atrophy. W. Braun.—p. 2510.
*Use of the Duodenal Tube. A. Weilbauer.—p. 2512.
*Secretion in Fasting Stomach. H. Galewski.—p. 2515.
*Volume of Blood in Pregnancy. R. Koch and M. Jakobovits.—p. 2518.
*Alimentary Reaction of Leukocytes. E. Stransky and J. Langer.—p. 2521.
*Liver Function Test with Methylene Blue. H. M. Cohn.—p. 2522.
*Influence of Mother's Age on Development of Child. Reiter and Ihlefeldt.—p. 2524.
Action of Calcium in Spasmophilia. K. Blühdorn.—p. 2525.
Hemoclastic Crises in Children. Schiff.—p. 2526.
Operation of Hernias in Children. H. Maass.—p. 2526.
"Middle Part Phenomenon" of Cerebrospinal Fluid. V. Kafka.—p. 2527.
Cause of Differences in Syphilitic Antigens. J. Schubert.—p. 2527.
Chronic Myeloid Leukemia with Bothriocephalus and Tenia Saginata. J. Stukowski.—p. 2527.
*Treatment of Calculi in Kidney and Ureter. W. Israel.—p. 2529.
Fifty Years of the Society for Public Hygiene in Berlin. E. Seligmann.—p. 2532.
Origin of Electric Currents in Living Tissue. R. Beutner.—p. 2535.

Origin of Urobilinogen.—Adler found that the amount of urobilin in urine is largely independent of the amount of pigment in the feces, and concludes that a part of the urobilin arises in the tissues. The chief place of origin remains in the bowels, but the hepatic origin seems well established. Urobilin is a pyrrol nucleus compound, and he believes therefore that Kupffer's cells, which have a well known affinity for pyrrol, play a part in its elaboration.

Balneology and Pharmacology.—Markwalder believes that the action of mineral waters consists in changing the organic ions in the organism; he calls this "transmineralization." It leads to a change in the reaction of cells and tissues to normal and pathologic stimuli.

Surgery in Acute and Subacute Liver Atrophy.—Braun was led to the surgical treatment of these affections by the fact that failures to make a diagnosis between a liver atrophy and cholangeitis are frequent. The drainage of the hepatic duct was followed in some cases by marked improvement of the condition. The amount of bile increased progressively, and the patients recovered. The operation is rational when the atrophy occurred after cholangeitis, but he thinks that it should be tried also in other cases of progressive acute atrophy of the liver. Chloroform must be strictly avoided.

Research on Use of Duodenal Tube.—Weilbauer only once found the duodenal contents sterile. In more than 100 other cases, bacteria were present. Pneumococci were the rule but streptococci and staphylococci were very frequent. Colon bacilli were present in cases with gastric achylia. It is well to look for typhoid bacilli in the duodenal contents in every case of jaundice, cholelithiasis and cholangeitis. The best and simplest liver function test is that for urobilin and urobilinogen in the urine.

Immediate and Late Secretion of Fasting Stomach.—Galewski emphasizes the difference between the secretion which occurs immediately after introduction of the tube into the empty stomach and the "tardy" secretion which comes after some time. The amounts of tardy juice were very variable, and even healthy subjects sometimes secreted over 100 c.c.

Volume of Blood in Pregnancy.—Koch and Jakobovits used Greisbach's method (injections of congo-red). In 13 normal women they found the average volume of blood 5.73 per cent. of the body weight (minimum 4.43, maximum 8.91). In 24 pregnant women, the average was 5.40 (minimum 3.73 per cent., maximum 8.17 per cent.). In 14 cases of labor, the blood volume was smaller than in the two preceding groups, average 4.46 per cent., minimum 3.95 per cent., maximum 5.22 per cent. There is no plethora in pregnant women.

Alimentary Reaction of Leukocytes.—Stransky and Langer examined the reaction of puppies to food, and found a leukopenia after all kinds of food (proteins, fats and carbohydrates). Young dogs react also to an injection of amino-acid. Alimentary leukopenia is a normal reaction of the growing organism, and is independent of the liver function. The leukopenia observed by the authors was only moderate.

Liver Function Test with Methylene Blue.—Cohn tested fifteen healthy persons and forty-five patients without hepatic or kidney disturbances with Roch's test (excretion of methylene blue after ingestion of 0.002 gm. by the mouth). Fully 60 per cent. of the healthy subjects and 80 per cent. of the other patients responded positively. The test is therefore useless.

Influence of Mother's Age and Repeated Pregnancies on Development of the Child.—Reiter and Ihlefeldt conclude from 634 legitimate children that repeated pregnancies and higher age of the mother influence the somatic and psychic qualities of the children unfavorably.

Indications for Treatment of Calculi in Kidney and Ureter.—Israel emphasizes the importance of early recognition and treatment of these stones, which would otherwise destroy a vital organ. Conservative treatment is indicated when the stone is small and aseptic, in bilateral lesions, and when there are contraindications from other organs. A calculus in the ureter is especially dangerous for the kidney. In conservative treatment, he advocates 2 quarts of mineral water and 6 tablespoonfuls of glycerin daily for a week. Catheterization of the ureter should be tried in every case. Nephrolithotomy is much more dangerous than pyelolithotomy. Ureterolithotomy has a good prognosis.

Dec. 23, 1922, **1**, No. 52

*Hemodynamic Problems. W. Weitz.—p. 2553.
*Comparative Liver Function Tests. E. Hesse and A. Havemann.—p. 2556.
*Perforating Ulcer and Peripheral Sympathectomy. M. Kappis.—p. 2558.
*Research on Burns from Intense Heat. H. Schridde.—p. 2563.
Reticulo-Endothelium Local Immunity. H. Siegmund.—p. 2566.
Treatment by Light. F. Schanz.—p. 2568.
*Specificity of Tuberculin Reaction. G. Tobias.—p. 2571.
*Puncture of Testicles in Cadavers. E. Mühsam.—p. 2572.
*Soft Food Containing Little Fluid. Alkan.—p. 2575.
Gelatin Embedding of Specimens for Demonstrations. Scheidemandel.—p. 2576.
Action Currents of Striated Muscles. J. G. de Barenne.—p. 2577.
*Some Clinical Chemical Methods. H. Citron.—p. 2578.
Multiple Chyle Cysts of Colon. H. Böge.—p. 2579.
Familial Polycythemia with Progressive Chorea. Doll and Rothschild.—p. 2580.
Treatment of Ozena. K. Amersbach.—p. 2580.
Future of Public Hygiene. A. Gottstein.—p. 2583.

Hemodynamic Problems.—Weitz reviews the conditions of dilatation and hypertrophy of the heart and the question of a direct influence of arteries and capillaries on the circulation.

Comparative Liver Function Tests.—Hesse and Havemann had comparatively good results with chromocholoscopy after injections of indigocarmin. Widal's test was positive only in one case out of sixteen in which no liver lesion was present. The increase in blood sugar over 15 per cent. after ingestion of 15 gm. of sodium lactate is a good liver function test. They recommend the use of several tests because all the functions of the liver are not necessarily affected in every case.

Cause and Treatment of Perforating Ulcer of the Foot and Elsewhere.—Kappis believes that the perforating ulcer is a decubital or traumatic (thermic, etc.) ulcer in a part with lowered sensibility. In most of the cases a fistula of the joint is present. It does not heal because the regeneration in a paralyzed tissue is not normal. The treatment has to endeavor to restore the nervous supply. Locally a resection of the affected joint is to be recommended. Sympathectomy may be tried.

Burns of Skin.—Schridde found that burns due to electric currents are histologically identical with those provoked by application of great heat (cautery).

Specificity of Tuberculin Reaction.—Tobias finds only quantitative differences between the reactions following tuberculin and nonspecific proteins. Yet he admits that the toxic component of tuberculin has a stronger affinity for the specific foci.

Puncture of Testicles in Dead Bodies.—Mühsam made punctures of the testicles in dead bodies and concludes that the method might give reliable clinical results when it is desired to know whether the testicle is able to form spermatozoa.

Soft Food Containing Little Fluid.—Alkan in all cases with gastric hypersecretion uses a diet containing very little fluid. The food does not require chewing.

Some Clinical Chemical Methods.—One of Citron's methods consists in the determination of the amount of fluid in the fasting stomach. The patient drinks a certain quantity of a solution of urea. Immediately afterward a stomach tube is introduced, and the percentage of urea in the fluid thus obtained is compared with the original. The urea nitrogen is determined by the hypobromite method. If the patient took 100 c.c. of a urea solution containing N per cent. of nitrogen and the mixed stomach juice contains N_1 per cent. of nitrogen, the amount of fluid which was present in the fasting stomach is $\frac{100(N-N_1)}{N_1}$.

Medizinische Klinik, Berlin

Dec. 17, 1922, **18,** No. 51

*Gaucher's Splenomegaly. H. Lippmann.—p. 1607.
*Cancer and Self-Protection of the Organism. C. Bayer.—p. 1610.
*Dry Gonococcus Vaccine. A. Buschke and E. Langer.—p. 1613.
*Intravenous Injections of Oily Substances. Lenzmann.—p. 1614.
Relation of Malaria in Berlin to Arsphenamin. G. Hamel.—p. 1615.
Polyarthritis and Pyelitis. R. Korbsch.—p. 1617.
*Treatment of Oxyuriasis with Arsphenamin. K. Hajós.—p. 1619.
Portable Apparatus for Pneumothorax. I. W. Samson.—p. 1620.
Roentgen-Ray Diagnosis of Duodenal Ulcer. G. Herrnheiser.—p. 1621.
Intravenous Injection of Concentrated Arsphenamin. J. R. Thim.—p. 1623. Conc'n.
Physicochemical Foundations of Spasmophilia. H. Hummel.—p. 1626.

Gaucher's Splenomegaly.—Lippmann reports a case of this rare familial disease. The splenomegaly, enlarged liver, yellow complexion, leukopenia, which changed into a leukocytosis after injections of epinephrin and during the dysentery, led to the diagnosis. In the puncture fluids and "harpoon" specimens from the spleen the usual big cells were present, but they did not contain free cholesterol. The cholesterol content of the blood was low. The patient is still living, and in comparatively good general condition.

Cancer and Self-Protection of the Organism.—Bayer reviews the etiology of carcinoma and the protecting action of the organism, and discusses means to enhance it.

Dry Gonococcus Vaccine.—Buschke and Langer found most of the commercial vaccines without effect, and their protein content very low. They attribute it to autolysis. A dry vaccine prepared from gonococci had good therapeutic effects, but the injections were so painful that they had to be discontinued.

Intravenous Injections of Oily Substances.—Lenzmann points out that small amounts of oil (0.25 gm.) cannot lead to an obstruction of the pulmonary circulation.

Treatment of Oxyuriasis with Arsphenamin.—Hajos reports favorable results with the use of 0.9 gm. neo-arsphenamin by the mouth in seven adults.

Dec. 24, 1922, **18,** No. 52

*Importance of the Anamnesis in Diagnosis. W. Neumann.—p. 1637.
*Psychophysical Relations in Internal Medicine. F. Mohr.—p. 1639.
*Akinesia in Chronic Blepharospasm. H. H. Elschnig.—p. 1641.
Treatment of Fistula of Anus. H. Sieben.—p. 1641.
Habitual Luxation of the Clavicle. H. v. Ortenberg.—p. 1642.
Forceps of the Practitioner. H. Strube.—p. 1645.
Diseases of the Bladder. E. Portner.—p. 1646.
Recent Literature on Soft Chancre. F. Pinkus.—p. 1648.

Tuberculosis of Lungs and Pathology of Personality.—Neumann shows in a special case of tuberculosis the importance of an exact history of the patient, and gives interesting details which result from comparison of the anamnesis with the findings of minute physical examination.

Psychophysical Relations in Internal Medicine.—Mohr finds that too little stress is laid on the fact that every somatic disturbance necessarily conditions psychic disturbances, and vice versa.

Therapeutic Akinesia in Chronic Blepharospasm.—Elschnig paralyzed the orbicular muscle of the eye with procain in a case of blepharospasm of several years' duration. The injection was made by Van Lint's technic for operations on cataracts. The result was good although not permanent, and the injections had to be repeated a few weeks later.

Münchener medizinische Wochenschrift, Munich

Dec. 22, 1922, **69,** No. 51

*Migraine in Children. H. Curschmann.—p. 1747.
*Optimal Action of Syphilitic Antigens. J. Hohn.—p. 1750.
*Leukopenia as a Reflex of the Autonomic System. E. F. Müller.—p. 1753.
Spontaneous Formation of Loose Bodies in Joints. E. Roesner.—p. 1757.
Turning of Heart in High Position of Diaphragm. Zezschwitz.—p. 1758.
Louis Pasteur. M. Gruber.—p. 1758.
Protection of Language in Science. E. Lick.—p. 1760.
Treatment of Tuberculosis and Lupus of Nose. G. Spiess.—p. 1762.
Medical Supervision of Athletics. K. A. Worringen.—p. 1763.
Technic and Interpretation of Ventriculography. W. Weigeldt.—p. 1764.

Migraine in Children.—Curschmann states that migraine in children is much more frequent and important than appears from textbooks. This neglect is due to the fact that the condition is rare in clinics. Yet it is frequent in private practice. Abdominal symptoms are characteristic. Many supposed colics, many cases of supposed appendicitis, ulcer of stomach and duodenum are migraine. Heredity is practically always present. The attacks are strictly periodic. Fever may be present.

Optimal Action of Syphilitic Antigens.—Hohn finds that the main difference between the complement fixation and the precipitation tests lies in the large amounts of serum which are necessary for the precipitation (about eight times more than in fixation). The colloidal state of the antigen is of the greatest importance. He recommends an antigen which after dilution shows with a magnifying lens (6x) extremely fine granules. The concentration of sodium chlorid is also important, and it must be titrated.

Leukopenia as a Reflex of the Autonomic System.—Müller found that intracutaneous (not subcutaneous) injections of indifferent substances (including normal saline and even air) cause leukopenia. Addition of minimal amounts of epinephrin delays the reaction. The phenomenon seems to be a reflex due to stimulation of the vagus. The end point of the reflex lies in the vessels of the abdomen. Their dilatation causes slowing down of the blood stream and accumulation of leukocytes in the abdominal organs. Increased tonus of the sympathetic system prevents this leukopenia. He agrees with Glaser's explanation of Widal's hemoclastic crisis as a vagus reflex. The liver has no direct influence. The cause is a change in the equilibrium between the vagal and sympa-

thetic tonus. The phenomenon cannot be used as a liver function test.

Dec. 29, 1922, **69**, No. 52

*Action of Different Strains of Spirochetes. Plaut and Mulzer.—p. 1779.
Bismuth in Syphilis. Felke.—p. 1781.
*Cultures of Spirochetes in Arsphenamin. W. Krantz.—p. 1782.
Physiology of Labyrinth. M. H. Fischer.—p. 1783.
Some Points in Microscopic Technic. Carl.—p. 1785.
Advertisements in the Reception Room. Scherbak.—p. 1787.

Action of Different Strains of Spirochetes on Nervous System of Rabbits.—Plaut and Mulzer studied the neurotropy of different strains of spirochetes on rabbits. The work as well as the whole field of experimental syphilis of the nervous system is made easily accessible by Plaut's suboccipital punctures of rabbits. The Wassermann reaction was always negative in rabbits' cerebrospinal fluid, but micromethods for the globulin test, cell counts, mastic and goldsol reactions gave good results. While one strain only exceptionally caused changes in the cerebrospinal fluid, another strain led to such changes almost regularly. Histologic findings confirmed these "clinical" results. They used also strains from the cortex of two cases of general paresis which caused in three generations of rabbits typical changes in the fluid without local changes at the place of inoculation. The histologic changes in these cases closely resembled those of human general paresis.

Cultures of Spirochetes in Mediums Containing Arsphenamin.—Krantz found that neo-arsphenamin did not inhibit the growth of spirochetes in Schereschewsky's medium in a concentration of 1:5,000. This is twice as strong as that in the blood of a patient after administration of 0.5 gm. of the drug.

Wiener klinische Wochenschrift, Vienna

Dec. 21, 1922, **35**, No. 51

*Roentgen-Ray Diagnosis of Duodenal Ulcer. M. Haudek.—p. 987.
Dengue. M. Eugling.—p. 991.
Roentgen Diagnosis of Duodenal Ulcer. G. Singer.—p. 993.
Dosage, Stimulating Doses and Radiosensibility. K. Ullmann.—p. 994.
*Sedimentation of Erythrocytes. Poindecker and Siess.—p. 997. Conc'n.
Scabies in Vienna. M. Oppenheim.—p. 998.

Roentgen-Ray Diagnosis of Duodenal Ulcer.—Haudek relies on roentgen ray for diagnosis. In seventy cases in one and a half years, thirty-six diagnoses were confirmed by operation, and only two were disproved. He describes his technic and the roentgenologic symptoms of duodenal ulcers.

Sedimentation Speed of Erythrocytes.—Poindecker and Siess find that accelerated speed of sedimentation is a good indicator of the activity of pulmonary tuberculosis, and therefore is important for prognosis. Occult focal reactions may be made apparent by this method.

Dec. 28, 1922, **35**, No. 52

Treatment of Tuberculosis. J. B. Andreatti.—p. 1005.
*Spontaneous Entero-Anastomosis. L. Berczeller and Z. Szilárd.—p. 1006.
*Hypertonic Solutions and Gastric Secretion. J. Karmel.—p. 1007.
Extensive Cervicovaginal Fistula with Six Weeks' Ovum. E. Graff.—p. 1011.
Curettage of Conjunctiva in Chronic Catarrhs. N. Blatt.—p. 1011.
*Test for Patency of Tubes. L. G. Dittel.—p. 1013.
Comment on "Indications for Roentgenotherapy." L. Freund.—p. 1013.

Spontaneous Anastomosis of the Intestine.—Berczeller and Szilárd ligated the rectum of white rats fed with starch, a food which could be almost entirely absorbed. They found that the passage was regularly restored in four or five days. The experiments were negative if the ligation was made on the proximal parts of the colon, or on the ileum.

Action of Intravenous Hypertonic Solutions on Gastric Secretion.—Karmel found that hypertonic intravenous injections, especially of sugar (20 c.c. of a 50 per cent. solution), decrease gastric secretion.

Test for Patency of Tubes.—Dittel points to some dangers of Rubin's method due to the possibility of pregnancy or infection.

Zentralblatt für Chirurgie, Leipzig

Dec. 30, 1922, **49**, No. 52

Comment on "Nerve Blocking in the Leg." O. Wiedhopf.—p. 1929.
*Spastic Ileus in Influenza. F. Colmers.—p. 1931.
Collapse of Anterior Transverse Arch of Foot. G. Hohmann.—p. 1933.
Contusions of the Kidney. K. Hugel.—p. 1935.

Spastic Ileus in Influenza.—Colmers mentions three cases of spastic ileus associated with influenza, in all of which an operation was performed. No obstruction was found but only spastic contraction of the intestine, which had given rise to the clinical symptoms. This condition may occur frequently during an epidemic of influenza. If colicky pains and similar symptoms associated with diarrhea and vomiting appear, spastic ileus should be suspected. In his cases an erroneous diagnosis was more or less excusable, since the onset of ileus symptoms was acute and, in spite of all treatment, the vomiting could not be checked nor the severe subjective symptoms relieved. In doubtful cases, however, he would still prefer to make a small abdominal incision, in order to discover the true condition of affairs, rather than run the risk of overlooking true intestinal occlusion. Spastic ileus in influenza may be due to the action of the central nervous system on the intestinal musculature. An irritation produced by pathologically affected mesenteric glands may play a part, or possibly a toxic influence from the intestinal contents.

Zentralblatt für Gynäkologie, Leipzig

Dec. 23, 1922, **46**, No. 51

*Roentgen Irradiation in Amenorrhea. H. Thaler.—p. 2034.
*Lipoids in the Corpus Luteum. T. Wiczynski.—p. 2044.
Comment on Müller's "Physiologic Ascites in Women." J. Novak.—p. 2050.
*Ileus During Pregnancy. H. A. Dietrich.—p. 2052.
*Teratoma Evacuated Through Rectum. J. Ohrenstein.—p. 2055.

Roentgen Irradiation in Amenorrhea.—Thaler reports good results from roentgen irradiation in cases of essential amenorrhea and in other disturbances based on hypofunctioning of the ovaries. In not less than thirty-six of the fifty-five women thus treated for secondary amenorrhea the condition was cured, and in the large majority of these cases menstruation became regular and remained regular during the whole period of observation. At the beginning of treatment Thaler used from six to ten Holzknecht units. He employed an Apex apparatus, provided with a Watt water-cooled tube. The distance of the tube from the skin was 23 cm., and 3 mm. of aluminum and deerskin was used as a filter. A large field between the umbilicus and symphysis pubis, extending laterally to the anterior superior spines, was irradiated. Frequently, a second irradiation with a somewhat weakened dosage was given a week later. If any further treatment seemed needed, an interval of at least four weeks was allowed to elapse. Then a double irradiation, as at first, was usually given. Very rarely were more than the two double treatments given. As the main purpose of irradiation was the stimulation of the development of the corpus luteum, from six to eight days after the end of the menstrual period were allowed to elapse, in the case of menstruating patients, before they were irradiated. Five of the eighty women with menstrual anomalies treated by irradiation became pregnant in a few months.

Lipoids in the Corpus Luteum.—Wiczynski recalls that the lipoids are no longer regarded as ordinary degenerative products of the cell. Investigations of recent years confirm the view that these bodies, with albumin, constitute a very important component of the cell protoplasm. The differences between the corpus luteum of the menstruating woman and that of the pregnant woman are not essential but of a morphologic nature. That the lipoids are not found in the microchemical preparations during pregnancy is not due to their absence but to combinations with albuminous substances, from which they are liberated through the action of the mixture of pepsin and hydrochloric acid. The corpus luteum of menstruation and the corpus luteum of pregnancy are one and the same organ, the future of which is determined by the fate of the ovum. The behavior of the lipoids in the corpus luteum furnishes proof that it is the ovum that plays the dominant rôle in the ovary; all other components of the ovary are to be regarded as auxiliary factors.

Ileus During Pregnancy.—Dietrich recounts an interesting case of ileus, which occurs rarely in pregnancy. Prompt laparotomy saved the patient in the seventh month of pregnancy and a healthy boy was born spontaneously at term. There was no compression of the intestine by the uterus. A

loop of the small intestine above the uterus was found to be with torsion of 270 degrees. When the torsion was reduced, an extensive invagination 60 cm. long was noted and 1.5 meters of the small intestine had to be resected. The volvulus may have been caused by the expanding pregnant uterus. Dietrich states that frequently in ileus associated with pregnancy the first symptoms are incorrectly interpreted, and the best time for operation is allowed to slip by.

Teratoma Evacuated Through the Rectum.—Ohrenstein reports a peculiar case of teratoma in a woman, aged 26. At the age of 5, a long tuft of hair suddenly appeared at the anal opening, and later reached a length of about 10 cm., so that the patient was compelled, from time to time, to cut off the hair that protruded. She always had the feeling of a foreign body in the rectum. The stool during all the years had presented the form of a hollow cylinder. She had had no particular trouble except in the case of hard stools. A few hours before admission to the hospital, at the age of 26, a profuse rectal hemorrhage occurred, and, at the same time, a tumor appeared at the anal opening, the size of a man's fist. The apex was irregularly lacerated and the color was bluish black. A tooth appeared in the lacerated opening and was removed. The tumor was attached to a pedicle, which extended from 11 to 12 cm. within the rectum. The following day laparotomy was performed; the utero-ovarian ligament was divided close to where it entered the intestine and was removed with the left tube. A degenerated portion of the right ovary was also resected. The tumor was drawn from the rectum by the pedicle, and the pedicle was excised from the rectal wall. Recovery was uneventful. The tumor was a typical teratoma with all three germ layers represented.

Casopis Lekaruv Ceskych, Prague

Dec. 23, 1922, **61**, No. 51

*Action of Epinephrin on Formation of Antibodies. A. Hrma.—p. 1217.
*Treatment of Encephalitis Parkinsonism. K. Henner.—p. 1223. Conc'n.

Action of Epinephrin on Formation of Antibodies.—Hrma tested the action of epinephrin injections on formation of hemolysin, on the complement content, on restitution of a lowered titer of immune hemolysins, and in some other instances. The results were entirely negative.

Treatment of Postencephalitic Parkinsonian Syndromes with Sodium Cacodylate.—Henner reports the results of this treatment in fifty-two cases, with 1,300 injections. Nearly 2,000 injections were given at the clinic without such mishaps as have been described by French authors. The solution used was sodium cacodylate 0.50 gm. in 2 c.c. of twice distilled water. The solution must not be older than two days. The intravenous injections were given three times weekly, starting with 1 c.c. and increasing to 4 c.c. At the end of one course the amount was decreased to 1 c.c. The whole course required a total of from 30 to 65 gm. of sodium cacodylate. After three weeks the treatment was repeated. Four such courses were given. Nicotin, alcohol, caffein are harmful. Physical treatment was used if the disease did not show signs of activity. The urine should be watched for albumin and sugar. After the injection no heavy meals are allowed. Of the fifty-two patients, forty-nine were influenced favorably.

Acta Medica Scandinavica, Stockholm

Dec. 21, 1922, **57**, No. 4

*New Method for Counting Blood Platelets in Man. A. Kristenson.—p. 301.
*"Spinal" Deviation of Intentional Movements. S. Ingvar.—p. 313.
*Red Corpuscles and Their Variations. E. J. Rud.—p. 325. Begun No. 2, p. 142.
Present Knowledge of Incomplete Bundle Branch Block. N. Stenström.—p. 385.
*The Classification of Human Blood. S. Hesser.—p. 415.

New Method for Counting Blood Platelets in Man.—Kristenson dilutes one part of blood with nine parts of a solution consisting of 10 gm. of urea, 2.5 gm. of sodium citrate, 0.005 gm. of mercuric chlorid, and 0.5 gm. of brilliant cresyl blue in 500 c.c. of water. The fluid hemolyzes erythrocytes and colors white corpuscles and platelets.

"Spinal" Deviation of Intentional Movements—Past Pointing.—Ingvar observed a deviation of the movement of one arm (in pointing to a place), if the person abducted the other arm, and especially if a weight was held in the abducted extremity. The phenomenon occurs only in the Romberg position, and not if the person is seated comfortably. Ingvar explains it as an unconscious compensation to preserve the equilibrium, and believes that the deviations due to the vestibular apparatus are also compensatory balance reflexes.

Red Corpuscles and Their Variations.—Rud found no constant or distinct influence of meals, time of the day, menstruation, site of puncture, and the venous or arterial origin on the relative number of erythrocytes. Of all physiologic conditions, pregnancy was the only one which decreased the number of red corpuscles.

The Classification of Human Blood.—Hesser examined forty serums for isoagglutinins and isohemolysins. He found that both properties belong in the same groups. If the hemolysins are not strong enough to dissolve fresh blood, their action can be demonstrated on old erythrocytes.

Finska Läkaresällskapets Handlingar, Helsingfors

November-December, 1922, **64**, No. 11-12

*Operative Treatment of Hallux Valgus. T. Sandelin.—p. 543.
Case of Mixed Sarcoma and Carcinoma in Bladder. F. Stenius.—p. 565.
*Turpentine in Treatment of Adnexitis. B. Nyström.—p. 575.
*Test Glycosuria in Pregnancy. S. Leskinen.—p. 584.
*Transfusion of Blood in Pernicious Anemia. M. Savolin.—p. 591.
*The Autonomic Nervous System. T. W. Tallqvist.—p. 616.
Scarlet Fever in Helsingfors. M. Björkstén.—p. 629.

Hallux Valgus and Its Operative Treatment.—Sandelin found flatfoot accompanying hallux valgus in 5.9 per cent. of the total 536 cases. The foot was normal in only 79.8 per cent. In 54 per cent. hereditary influence was manifest, and in 23 per cent. of the others no data were known. Recent reexamination of 116 of the 147 patients given operative treatment since 1904 showed excellent results with the Hueter method in 70 per cent. The head of the bone is cut off with straight nippers. Sandelin advises against resection for cosmetic purposes alone. Massage hastened recovery after the operation.

Turpentine in Treatment of Adnexitis.—Nyström had good results from intramuscular injection of turpentine in some cases of gynecologic inflammation. But on the whole the results were disappointing.

Alimentary Glycosuria as Early Test for Pregnancy.—Leskinen applied the Kamnitzer method in 48 women, 13 in the first three months of pregnancy and 31 nonpregnant controls. The test is an intragluteal injection of 2 c.c. of a solution of 0.03 parts of phlorizin in 30.5 parts distilled water, with 0.015 parts procain. It is applied in the morning before eating, and at the same time the patient drinks 200 c.c. of water. The urine voided half an hour later is examined and another glass of water is ingested. At half hour intervals the Nylander test is applied to the urine. The reaction is positive when precipitation occurs on boiling for one minute. In the 13 pregnant women the test was positive in 12 and positive on repetition a month later in the thirteenth. It was positive in 2 of the 4 cases of abortion. It was positive likewise in 15 per cent. of the 31 nonpregnant women. Hence the test is not infallible. The positive reactions all occurred within the first hour.

Transfusion of Blood in Pernicious Anemia.—Savolin gives the details of fourteen cases of Biermer's anemia treated in Tallqvist's service by injection or transfusion of blood. One woman now aged 41, had typical pernicious anemia in 1909. It improved under arsenic treatment but constantly recurred. In 1915 the hemoglobin was 40 per cent.; the erythrocytes 1,900,000. An intramuscular injection of defibrinated blood was followed by high fever, but she began to improve, and promptly regained full earning capacity and has felt entirely well during nearly eight years since. A sister and aunt had died from pernicious anemia. In three other cases transfusion of blood had a very favorable influence. One man is still well two years later.

The Autonomic Nervous System.—Tallqvist reviews the pathologic physiology of the vegetative nervous system that has proved of practical value.